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The children are both our near and distant future. It is by them and through them that we feel linked to the immortality of the human race.

Elie Wiesel, 1989

University of Alberta

The Effects of Residential Destination on the Education and Psychological Status of
AIDS Orphans

by

H. M. Nelly Kodero



A dissertation submitted to the Faculty of Graduate Studies and Research in partial
fulfillment of the requirements for the degree of Doctor of Philosophy

Department of Educational Psychology

Edmonton, Alberta
Spring, 2000

University of Alberta

Faculty of Graduate Studies and Research

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a dissertation entitled *The Effects of Residential Destination on the Education and Psychological Status of AIDS Orphans* submitted by *H. M. Nelly Koder* in partial fulfillment of the requirements for the degree of *Doctor of Philosophy*

Dedication

This dissertation is dedicated to two special people, Dr. David Baine and Mr. Edward McCue. Dr. David Baine, professor emeritus of the University of Alberta, offered me some financial assistance and accommodation during my stay in Edmonton. Mr. Edward McCue of Housing and Food Services at the University of Alberta, made my long summer holidays short by offering me a job. Because of Edward, I left the University of Alberta, not only as a Doctor of Philosophy but also as a maintenance expert. Thank you Edward for treating me with dignity and respect like your own child.

Abstract

This casual-comparative study investigated the effects of residential destination on the education and psychological well-being of AIDS orphans in Kisumu, Kenya. 450 orphans aged between 6 and 15 years living in orphanages, guardians' homes, and extended families were compared on these variables. The study examined the plausible causes of the differences observed among the orphans and the process of adoption of orphans. The Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978), Biographical Form, Caregiver Questionnaire, and the Quality of Caregiver-Orphan Relationship Scale (QCORS) were used in data collection. This study reports the construction and validation of the QCORS.

The results showed that the educational and psychological needs of the orphans were best met by orphanages, followed by guardians' homes and were least met by extended families. The plausible causes of the differences investigated did not fully explain the differences observed among the three groups of orphans. The attitude of caregivers towards orphans and peer support were identified as two factors that could have affected the psychological well-being of orphans. The findings also indicated that AIDS patients did not make placement and custody arrangements for their children before dying, and that the caregivers did not consider the HIV status of the orphans before adoption. Moreover, the results of this study indicated that caregivers who were struggling to raise hundreds of orphans existing in Kisumu received no support whatsoever from the Kenyan government.

The findings of this study challenged the common belief in Africa that the extended families will be there to meet the needs of the orphans when a disaster strikes. The reality as reflected in this study is that extended families can no longer adequately care for the orphans. The government should help the caregivers to

meet the basic needs of the orphans and should offer these children free education. Peer support is perhaps the best way to help AIDS orphans overcome their current and future psychological problems. Finally, there is need to consider the HIV status of these children during adoption because research shows that there is some risk, though low, of child-to-child HIV transmission.

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I have made several decisions in my life; three of them have so far turned out to be wisest: choosing Dr. Robert Frender as my academic adviser and dissertation supervisor; marrying my wife, Josephine; and learning to play squash. Dr. Robert Frender guided me throughout my graduate studies at the University of Alberta. Bob believed in me from the start and never flinched. He stood by me even when my dissertation appeared to be heading nowhere. I have no shred of doubt in my mind about his high quality of supervision and his extraordinary commitment to academic excellence.

My dear wife, Josephine kept my domestic affairs running when I was thousands of kilometers away in Edmonton and had no time to write letters. She nurtured our lovely children alone, I will never make any claim about their success in life. Finally, playing squash drove stress out of my mind and kept me joyful even when I had nothing to be happy about.

I wish to thank in a special way members of my supervisory committee, Dr. Robert Short and Dr. Linda McDonald who constructively advised me on this dissertation. I am indebted to the orphans and their caregivers who participated in this study. It is their responses to my research questions that became the grit and grist of this dissertation and gave this piece of work a voice of its own. I am also indebted to my two research assistants, Mr. Hezekia Okello and Mr. Shabianus Onyango who braved the scorching sun of Kisumu to track down the subjects.

Lastly, I must also thank in a special way Moi University for granting me study leave with pay, the Department of Educational Psychology, University of Alberta for offering me teaching and research assistantship, and Alberta International at the University of Alberta for meeting my research expenses. Without your financial assistance this work would not have been accomplished.

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CHAPTER I

INTRODUCTION

Scientific and medical breakthroughs have allowed us better understanding of the virology and epidemiology of the AIDS epidemic. The behaviors and biological routes responsible for the transmission of HIV infection are now well defined, thus providing the foundation for prevention efforts (Quinn, 1996). However, reports indicate that current efforts are failing to keep pace with the epidemic in the developing countries, in terms of providing essential services to AIDS orphans (Piot, 1997, July 24). There are also reports that most AIDS orphans are being cared for by extended families under difficult circumstances (Foster et al., 1995). These reports conclude that the time is right for extensive research on the life conditions of AIDS-orphans in countries severely affected by AIDS.

In the absence of any cure for AIDS, relieving the distress of children orphaned by AIDS is perhaps the best test of our future commitment to social stability, economic development, and respect for the dignity and worth of each individual (De Cock, 1996). AIDS tests the moral fabric of our society, not because it is a punishment for the wages of sin, as a few self-righteous ideologues would have us think, but because it sharpens controversies about our rights and responsibilities towards one another. It offers a moral test to the society about its responsibilities to the AIDS orphans. To watch with objective detachment while these innocent orphans struggle for food, shelter, and education is to fail a moral test. The enemy is not those who are orphaned by the virus or those infected with the virus, but the virus itself. The virus is infecting more than 16,000 people per day, and everyone is potentially at risk for being infected (Foreman, 1999, January 7).

One of the most distressing consequences of HIV/AIDS is its impact on children. AIDS leaves as its legacy a generation of orphans traumatized by multiple losses, isolation, stigma, and grief. These children are experiencing higher levels of anxiety because of their worries about the future and their poor living conditions after their parents die of AIDS. These children lack the proper care and supervision they need at this critical period of their lives. They look to society to provide them with services such as orphanages, health care, and education {National AIDS and STDs Control Program (NASCP), 1996}. The large number of such children in sub-Saharan Africa is acutely worrying. There could be as many as one orphan for every two healthy, economically active women in sub-Saharan Africa in the near future (Gregson, Garnett, & Anderson, 1994).

The AIDS epidemic has orphaned a large number of children in Kenya. An estimated one million AIDS orphans will be living in Kenya by the year 2005 (UNICEF, 1991). Kisumu district, in the western part of Kenya leads in HIV/AIDS cases in the country. The results of sentinel surveillance conducted in 1994 indicated that 49.4 percent of women in the district who attended antenatal clinics were HIV-positive (NASCP, 1996). Although the exact number of AIDS orphans in Kisumu has not been reported, this statistic could be as grim as the percentage of seropositive pregnant women in the district. Research has shown that children with HIV-positive mothers have a high risk of becoming AIDS orphans (Ryder, Kamenga, Nkusu, Batter, & Heyward, 1994).

The need to prepare children to become productive members of society is currently the subject of considerable public attention (Goerge, Voorhis, Grant, Casey, & Robinson, 1992). Children, whether orphans or not, are the future of any society. Any society that ignores children ignores its future. According to Bronfenbrenner, "If you want to turn a society around, it's around children that you have the hope of doing it" (quoted in Evans, 1995, p. 209). Similarly, children are

also the key to keeping a society on course. Unfortunately, millions of children orphaned by AIDS in Africa already are groping for a bright future and are in dire need of intervention. Left without intervention, such children live in a volatile and threatening world. They are the “prime targets for HIV infection. . . . Emotionally vulnerable and economically disadvantaged, such children are forced to live on streets and are easily drawn into selling sexual favors” (UNICEF, 1990, p. 17). The Undugu Society in Kenya randomly tested female street children in their early teens for HIV. More than a quarter of these teenagers tested HIV-positive. Furthermore, it was found that 21 of the 22 girls had more than one sexually transmitted disease (STD), including gonorrhea, syphilis, and candidiasis (NASCP, 1996). In addition to being vulnerable to AIDS and STDs, a number of these orphans drift through their childhood years without finding the skills, virtues, or sense of purpose that they will need to sustain a fruitful life.

The AIDS epidemic is also unique in that it gives HIV-infected parents time to reflect about future placement and custody of their children. Reports indicate that HIV-infected parents worry helplessly about the future of their children. For instance, Leah was diagnosed as HIV-positive the year her husband died. Today, she is bed-ridden due to AIDS and confined within the four walls of her rented single room in Mombasa, Kenya, which she shares with her five children. She fears for the future of her family. In an interview, she said, “I could only plan for the children if I had property or someone to look after them. . . . As you see, I have no family and it is only me they have. Once I’m gone, another song begins for them” (NASCP, 1996, p. 46). Leah’s case epitomizes the most difficult task HIV-infected parents face before they die—making a decision about the future placement and custody of their children (Draimin, 1995).

Leah’s expressed concerns are common in the literature. Geballe, Gruendel, and Andiman (1995) reported that HIV-positive parents ask a number of

questions about the future of their children: Whom do I trust the most to care for my children? Should a new guardian begin taking care of the children now? Can I keep my children together? Will my family manage to care for my children? What happens if I don't make a plan? However, research data indicate that most HIV-infected parents do not make placement plans for their children and that their relatives do not discuss such issues with them.

In Kisumu district, succession planning rarely takes place when it is known that a person is dying. Among the Luo in Kisumu it is improper to raise such an issue with a dying person because the relative might be accused of causing the sickness. However, a relative instructed by the dying person to look after his/her children and property would be obliged to accept, for fear that misfortune would befall him/her after refusing the request (Parkin, 1978). In contrast to the Luo, among the Shona in Zimbabwe, decisions about the inheritance of children and property traditionally take place at a ceremony occurring one year after the burial of the deceased (Ankrah, 1993). Learning who decides about the residential destinations of AIDS orphans in Kisumu, would be useful, particularly because the Luo are reluctant to discuss custody of their children before dying, and a large number of orphans needing help exist in the district.

The placement and custody of AIDS orphans is a major problem in areas like Kisumu, which are hard hit by the HIV epidemic. Indications are that people are reluctant to take in orphans because of the economic constraints placed on their households. Barnett and Blaikie (1992), in addressing the placement of AIDS orphans in Africa without discussing who decides about placement, reported that the orphans end up in one of the following four residential destinations: parental homes, grandparents' homes, guardians' homes, or orphanages. However, this classification of orphans' destinations does not correspond well with the Luo social organization in Kisumu district. For instance, the distinction between

grandparents' homes and parental homes is not clear. Grandparents, parents, and paternal uncles of the orphans often stay in a common homestead called *dala*. The residential destinations of AIDS orphans in Kisumu can be better classified into extended families, guardians' homes, and orphanages. My study investigated the effects of these three residential destinations on AIDS orphans.

The Purpose of the Study

This study's major objective was to investigate how well AIDS-orphaned children fare educationally and psychologically in their residential destinations—extended families, guardians' homes, and orphanages; and how well AIDS orphans related to their caregivers in these residential destinations. Specifically, it assessed the school dropout rates, grade repetition rates, level of anxiety, and the quality of the relationship between AIDS-orphaned children and their caregivers in these destinations. No published systematic study in either the developed or in the developing world has compared the effects of these residential destinations on these educational and psychological variables.

This study's second main objective was to examine the possible causes of any differences observed among the three groups of orphans in the educational and psychological variables investigated. This objective was achieved by assessing the major factor caregivers considered before accepting the responsibility of caring for orphans and by finding out whether or not siblings orphaned by AIDS were separated during adoption. The objective was also achieved by finding out whether or not caregivers received material/financial support from members of the orphans' extended families and from the government, and by comparing the amount of money the three groups of caregivers spent on the upkeep of the orphans.

The third objective of this study was to examine the process of adoption of AIDS-orphaned children. This objective was achieved by determining whether or

not AIDS patients made placement and custody arrangements for their children before dying. This objective also involved finding out whether or not caregivers considered the HIV status of the orphans before adoption. This objective was worth pursuing because there are reports that AIDS orphans have difficulty in finding a place to live after the death of their parents because of the stigma associated with AIDS (NASCP, 1996).

This study's final objective was to construct the Quality of Caregiver-Orphan Relationship Scale (QCORS). This objective was necessitated by the lack of an appropriate, ready-made research instrument in literature that could be used to assess the quality of the relationship between AIDS orphans and their caregivers in Kisumu district. Because QCORS is a new research instrument used for the first time in this study, its construct validity and reliability were a major concern. This objective was achieved by factor analyzing the responses of orphans to the items in this scale, and by determining the test-retest reliability of this scale. This was the first objective to be achieved in this study. The data used to achieve this objective were collected in the preliminary research (Study 1) conducted before the main research (Study 2). The achievement of this objective resulted in the revision of the original QCORS, leading to the formulation of a 13-item scale, which was then used to collect data in the main research.

Theoretical Framework of the Study

This research is atheoretical because nobody has investigated and developed a theory about the developmental profile of AIDS orphans in Africa. Therefore, this research is not a theory-confirmation enterprise but a step towards the better understanding of AIDS orphans in Kisumu. Conducting an atheoretical study in Africa is acceptable because of the paucity of data in the continent. For instance,

only one survey was conducted in 1994 about AIDS-orphaned children in Kenya (NASCP, 1996).

According to Guyer (1981), the dearth of data dictates that research studies in Africa should be based on observations and on questions posed about problems in the continent rather than conducted to demonstrate or illustrate theoretical assumptions. The data from other parts of the world are rich enough to allow relationships between variables to be assessed empirically rather than posited polemically. This study was based on the observations that many AIDS orphans exist in Kisumu and that little is known about them. Because of paucity of data on the education and psychological well-being of these children, it was impossible to formulate and test hypotheses about these variables. Instead, questions were raised about education, anxiety, and quality of caregiver-orphan relationship. A systematic investigation was conducted to answer the questions posed.

Rationale for the Study

First, researchers uniformly agree that scientific knowledge begins in the chaos and flux of what is called “common sense” (Wartofsky, 1969), which is the starting point for research because it is cognitively irritable. That is, if one tries to focus attention on it, it becomes vague, contradictory, and muddled. Research therefore begins with common-sense observations and moves to systematized knowledge that brings order and organization into this flux (Overton, 1991). This research is no exception to this scientific rule. It began with common-sense observations: that AIDS orphans end up somewhere, and that their success in education and life depend on the quality of their residential care.

Second, this study’s literature review indicated that little is known about the AIDS orphans in Africa. Most scientific studies on AIDS have concentrated on the nature and the mode of transmission of the AIDS virus, ignoring survivors of the

epidemic—the AIDS-orphaned children. The impact of the HIV/AIDS pandemic includes the potential loss of these children's future contribution through their lack of education and training. There is need for intensive research about the AIDS orphans, so that the life conditions of these children can be better understood.

Third, in spite of the current and impending orphan crisis in Kenya, and despite the global call for research and planning in order to prevent disaster, there has been little evidence that such mobilization has occurred. The problem of AIDS orphans in Kenya is now a national problem, requiring national leadership. Its solution can only be found through a targeted and coordinated response of governmental and non-governmental agencies. These bodies need research data to make decisions about appropriate residential destinations to promote the well-being of these orphans.

Fourth, this study was necessary because no social security exists for the unemployed in Kenya today. Moreover, the government does not pay benefits to the children or caretakers as a result of the death of a parent or parents. The country is going through lean years when it cannot afford to provide money to the needy. The government is plagued with problems symptomatic of a youthful stage of economic and political development: low income per capita and a high rate of unemployment. Such a grim situation begged for an investigation into how the unfortunate orphans are being prepared for the challenges awaiting them in the society.

Fifth, this study's findings will alert the government of Kenya about the education, anxiety, and the quality of the relationships of AIDS orphans in their residential destinations. It also hints to the government that these children need as much attention as the AIDS patients, and that some of the nation's meager resources should be spent on them. Those infected with HIV should enjoy the same human rights as the rest of the population. However, AIDS patients are at the mercy of a

scientific discovery of the cure for AIDS, while their children and those children already orphaned by AIDS are the nation's future.

Finally, this study provides data that could be used by policy makers to enhance the quality of intervention programs geared towards improving education and psychological well-being of AIDS-orphaned children in their residential destinations. Implementation of intervention programs without research data often lead to failure of such programs.

Geographic Location of the Research

This research was conducted in Kisumu district, Kenya. According to the 1989 census, Kisumu district had a population of 674,000 (Ministry of Planning and National Development, 1983). This district was chosen for the study for two major reasons. First, the district has the highest rate of HIV/AIDS cases in Kenya, suggesting a high concentration of orphans in the district (NASCP, 1996). Secondly, the Agha Khan Rural Development project has been functioning in the district since the 1980s, and through this project, records of deaths and births are well kept, enabling the researcher to recruit AIDS orphans into the study.

Organization of the Dissertation

This dissertation contains six chapters including this introductory chapter. Chapter II contains a review of the research literature related to AIDS and AIDS orphans in Kisumu district, and an overview of the research objectives and the research questions. Chapter III reports on the methods used and results obtained in Study 1. This chapter provides a description of the population and sample involved in this study, and a detailed account of the construction and validation of the Quality of Caregiver-Orphan Relationship Scale. Chapter IV reports on the methods used in Study 2. It includes a report on this study's design, sample, instrumentation,

procedure, and data analysis. Chapter V reports on the results obtained in Study 2. Chapter VI is a discussion of findings in Study 2. This final chapter also contains implications for policy makers, recommendations for further research, delimitations, limitations, and the conclusions of this study.

CHAPTER II

LITERATURE REVIEW

This chapter contains a review of the research literature related to AIDS and AIDS orphans. It opens with a report on the nature of HIV and AIDS, the history of AIDS in the world, and the status and transmission of AIDS in Africa. It then reports the measures being undertaken in Kenya to curb the spread of the virus. Next this chapter focuses on children orphaned by AIDS, the social organization of the Luo, and the residential destinations of AIDS orphans in Kisumu. It also examines the educational status and psychological well-being of AIDS orphans in Kisumu. It ends with a summary of the literature reviewed, an overview of the research objectives, and the specific research questions addressed in this study.

Nature of HIV and AIDS

AIDS is a disease caused by a deadly virus: the Human Immunodeficiency Virus (HIV). HIV is a retrovirus infecting several kinds of cells in the body; the most important is a type of white blood cell called the CD4 lymphocyte (also known as the T4 cell). The CD4 cells are the immune system's key fighters against many infections and certain cancers. By attacking the CD4 cells, the HIV virus disables the body's defense system and destroys its ability to fight off infections. As the immune system deteriorates, a variety of life-threatening complications begin to surface. Death is often caused by the repeated opportunistic viral, bacterial, and parasitic infections that the HIV-caused immunodeficiency allows to become overwhelming. The opportunistic infections are caused by microbes that usually do not cause illness in healthy people and that occur mainly in the skin, the lungs, the digestive system, and the brain (McArthur, 1987). However, not all diseases are caused by opportunistic infections; the HIV itself is cytopathic and produces clinical

diseases such as encephalitis, and AIDS-related dementia (Baron, Chang, Howard, Miller, & Turner, 1994).

An AIDS diagnosis is given by a medical doctor to a patient who is infected with HIV and who is ill with one of several diseases including tuberculosis, toxoplasmosis, pneumocystis carinii pneumonia (PCP), wasting syndrome, candidiasis, and HIV dementia. Furthermore, people also receive an AIDS diagnosis when they are HIV positive and are suffering from certain forms of cancer such as *Kaposi sarcoma*. However, in 1993, the Center for Disease Control (CDC) in the U.S. revised its definition of AIDS to include people who do not have one of these diseases or cancers, but whose immune systems are severely damaged—having CD4-cell counts of $200/\text{mm}^3$ of blood or below. Uninfected persons and healthy HIV-infected subjects have CD4 lymphocyte count of greater than or equal to $500/\text{mm}^3$ of blood (Baron et al., 1994).

HIV-infected individuals go through two major stages: the asymptomatic stage and the symptomatic stage. The asymptomatic stage is the latency period when most HIV-infected individuals are not sick. During this period, however, the virus is actively multiplying, and infecting and killing the immune system's cells. This stage, which is longer than the symptomatic stage, typically lasts 10 years. The term “AIDS” refers, strictly speaking, only to the symptomatic stage, which is the most advanced stage of HIV infection. This stage is characterized by opportunistic infections, and a person going through this stage is described as having “full blown” AIDS. The symptomatic stage, which is the fatal stage of HIV infection, usually lasts for less than one year (Kenneth, Dadds, & Terry, 1996).

Developing a vaccine or drug against the HIV is complicated because this virus has different strains (A, B, C, D and E) and a high rate of mutation and replication. Vaccines developed to work against one strain may not necessarily protect against another. This virus has an extraordinary rate of mutation, and by

midstage in the infection, the average person has a million different forms of the virus; by the late stage, over one hundred billion different forms. The several combinations of antiviral drugs currently used are failing to control viral replication because drug-resistant strains of the virus emerge before its replication is stopped. In fact, the ability of HIV to vary its antigenic makeup within the individual under pressure from the immune system or antiviral chemotherapy has been recognized (Han, Shaw, & Taylor, 1986).

A virus like this changes its appearance so fast that no single vaccine or drug can target all variants. No evidence exists of an effective vaccine, and confusion reigns over efficacy trials (Okeyo, 1996). Because of poor funding and the difficulty in developing a vaccine or a drug against HIV, potent vaccines and drugs for fighting this virus may be years or decades away. In fact, HIV has emerged as arguably the most important epidemic of the twentieth century (Bartlett & Finkbeiner, 1996). HIV/AIDS is now the world's worst infectious disease, overtaking tuberculosis and malaria (Staff, 1999, June 25)

Brief History of AIDS in the World

The history of AIDS/HIV is brief but dense. AIDS was first recognized as a discrete medical entity in 1981 in the US in young homosexual men who had serious infections of *pneumocystis carinii* pneumonia (PCP) and *Kaposi sarcoma*, unusual phenomena for young men with no underlying disease. A drug technician at the Center for Disease Control noticed an unusually high number of requests by gay men for the drug pentamidine in the treatment of PCP. This led to a scientific report of PCP occurring unusually among gay men in Los Angeles. Prior to 1981 PCP had only been encountered in patients who were immunocompromised, such as infants born with a primary immune deficiency, in renal transplant units where patients had received immunosuppressant chemotherapy following kidney

transplants, or in oncology units, where patients had been immunosuppressed as a result of receiving anti-cancer chemotherapy. At about the same time, an unusually high occurrence of *Kaposi's sarcoma* was reported among homosexuals in New York. *Kaposi sarcoma* is a vascular neoplasm, only common in elderly men where it is manifested by skin lesions.

In 1982 the syndrome was called Gay Related Immune Deficiency (GRID) because it was considered peculiar to homosexuals. It started to be clearer that this syndrome was caused by an infectious agent, possibly a virus that could be spread through blood and anal intercourse. However, in the same year GRID was reported among female and male heterosexuals, intravenous drug users, and hemophiliacs. The syndrome was renamed Acquired Immune Deficiency Syndrome (AIDS) because it was clear that it did not just affect gay men. The word acquired was used because unlike other immune deficiency diseases, it was an illness that was transmitted from someone else (Duh, 1991).

The first case of AIDS was diagnosed in the United Kingdom in December 1981, and by 1983 the country had witnessed many cases of the scourge. By 1987, nearly 6,000 cases of AIDS throughout Europe had been reported to the World Health Organization (Obel, 1984). Today, at least 40,000 people have been infected with HIV in UK, and around 13,000 people have died from AIDS (Xinhua, 1999, April 13). The precise determination of when and where the first case of AIDS occurred in Africa is difficult. However, retrospective clinical studies show an increase in frequency of HIV-related diseases between the late 1970s and early 1980s (Berman, 1988). For instance, epidemic increases in chronic life-threatening diarrheal illnesses were noted in the late 1970s in Kinshasa, Zaire. In Rwanda a marked increase in esophageal candidiasis was first noted in 1983, while in Zambia and Uganda, there were marked increases in cases of *Kaposi's sarcoma* between 1981 and 1983 (Mati, 1997). In Kenya, the first case of AIDS was

identified in 1984 and by the end of the same year seven more cases were identified. Since then, the HIV prevalence rates have been rising rapidly from 3.3 per cent in 1990 to 4.4 per cent in 1991 and 7.5 per cent in 1993 (Obel, 1984). Today, about 14 per cent of adult Kenyans are living with HIV/AIDS (Staff, 1999, June 9).

The first four years following the recognition of AIDS as a deadly disease were spent largely on trying to identify the causative factor responsible for AIDS. Although the scientific community strongly suspected that the causative agent for AIDS was viral, it was not until May 4, 1984 that Robert Gallo and his team announced with conclusive finality the implicated organism for this dreaded disease. Gallo and his team not only managed to isolate the mysterious virus but had also grown it in large quantities for the first time, in cells he dubbed H9 that were not killed by the virus. Since then this virus has been studied more than has any organism in human history (Latham, 1992).

Status of AIDS in Africa

AIDS is the leading cause of death in sub-Saharan Africa, and the fourth leading cause of death in the world. About 11 million Africans have died from AIDS over the past 15 years. Of the 33 million people throughout the world who are infected with HIV, more than 80 per cent of these people come from Africa. In some African countries, one out of four people are infected with HIV (Associated Press, 1999, September 18). It is estimated that 22.5 million people infected with HIV/AIDS and more than eight million AIDS orphans exist in sub-Saharan Africa. Sub-Saharan Africa continues to be the global epicenter of AIDS, and there is speculation that Africa is being lost to AIDS with nothing much to be done about it (Xinhua, 1999, June 4). Furthermore, research data suggest that the period between HIV infection and death from AIDS is much shorter in Africa than in

developed countries—5 versus 11 years (Gordon, 1996). The poor quality of medical care given to people living with AIDS is the main factor behind this early death in Africa (Okeyo, 1996). The new combination of therapies AZT and Lamivudine (3CT) for AIDS—costing up to US\$ 15,000 a year per patient—is unaffordable in Africa (Piot, 1997, July 24).

Although there is no country in Africa where AIDS cases have not been reported, research shows that most people with AIDS come from central and eastern Africa—the so called “AIDS belt” (Ashford, 1995). These countries include Uganda, Zimbabwe, Tanzania, Malawi, Rwanda, Zambia, and Kenya (Mann & Tarantola, 1996). However, Southern Africa has joined the league of regions severely affected by AIDS. It is estimated that 3.6 million South Africans carry the AIDS virus (Reuters, 1999, April 20). In Uganda, 1.4 million people are living with AIDS and about one million have died of it (Staff, 1999, June 3). The disease is so common in Zambia that it has lost its social stigma. The Zambian ministry of health estimates that half the country’s population will eventually die of AIDS (Staff, 1999, August 14). In Zimbabwe, about 25 per cent of the adult population is HIV infected (Xinhua, 1999, May 30). State morgues in Zimbabwe are extending their hours to cope with the soaring death rate, mostly as a result of AIDS. An estimated 3,000 people die every week in this country, nearly 70 per cent of them from AIDS-related illness (Staff, 1999, June 22). Reports show that more than 2 million Kenyans are HIV infected and that 80 per cent of the deaths in Kenya’s civil service are now being caused by AIDS (Reuters, 1999, September 26).

Transmission of HIV in Africa

In Africa, the HIV epidemic started as and has remained a predominantly heterosexual epidemic; it kills men and women alike. It is estimated that

heterosexual transmission of HIV accounts for 70 - 80 per cent of the cases in Africa (WHO, 1995). There are reports that most of the AIDS sufferers in Africa are heterosexual men and women living in legitimate marital relationships (Onyango & Walji, 1988). The heterosexual mode of transmission explains why the male-female ratio among African AIDS patients is approximately 1:1 (Caldwell, Orubuloye & Caldwell, 1992). This ratio in turn explains why there is a large number of total orphans who have lost both parents in Africa today. In other parts of the world, for example, in the US and Europe the male-female ratio among AIDS patients is 13:1. The male preponderance in the US and Europe is believed to be due to the homosexual and drug injection modes of transmission of HIV (Duh, 1991).

HIV is also spread in Africa through vertical transmission, medical injections, blood transfusion, traditional child birth, skin scarification, and ritual operations (circumcision and clitorodectomy) using contaminated equipment. The vertical (mother to child) transmission of HIV follows heterosexual transmission in predominance in Africa. The heterosexual and vertical transmissions of HIV accounts for nearly 98 per cent of all HIV infections in the continent. The predominance of mother to child transmission (MTCT) of HIV in African explains why this continent is a global leader in the number of HIV positive children. It is estimated that 2.7 million children (over 90 per cent of all HIV-infected children in the world) in sub-Saharan Africa are infected with HIV (Mati, 1997).

The MTCT of the virus occurs at different times and by different routes. Although most transmission clearly occurs perinatally during delivery through passive transfer of blood, it can also occur prenatally through placenta and postnatally through breast feeding (Mano & Cherman, 1991). Research indicates that breast feeding is an important cause of MTCT and may account for 7 - 14 per cent of the overall transmission rate (Nicoll, Newell, Van Praag, Van de Perre, &

Peckham, 1995). MTCT is common in sub-Saharan Africa because a high percentage of HIV seropositive women breast feed their babies. A study conducted in Kenya by Datta et al. (1994) showed that 32 per cent of children born to HIV-infected mothers contacted the virus through breast feeding. It has also been reported that up to 35 per cent of children born to HIV positive mothers become infected in Africa, compared with just 5 per cent in France and the US. The reason for the difference in infection rates is that HIV positive mothers in the West have access to expensive drugs and are less likely to breast feed. The drug Zidovudine (AZT), which has been shown to reduce viral load in pregnant women and consequently reduce the rate of MTCT, is expensive and unaffordable in sub-Saharan Africa (United Nations, 1998, June 29).

There is a debate among scholars and policy makers about whether the risk of HIV transmission through breast milk is sufficient to justify advising HIV positive women in developing countries to change to artificial feeding (which is the present policy in industrialized countries). The World Health Organization and UNICEF recommend that women in developing countries breast feed their children until the age of two years (Stephenson, Lathan, & Kuz, 1985). According to Mason, the head of WHO secretariat, as a general principle and irrespective of HIV infection rates, promotion of breast feeding should continue in Africa. A breast fed baby is guaranteed a minimum supply of proteins, energy, and the means to fight off infections (Xinhua, 1999, June 25). Premature weaning of babies in the developing countries is associated with iron deficiency, coeliac disease, infections, allergies, obesity, and hypertension. In contrast, premature weaning in developed countries does not have these negative consequences because the babies are almost always well nourished, whatever the type of feeding they may be receiving (Davanzo & Tallarico, 1995).

The decision to wean or not to wean is related to some very difficult sexuality and child bearing choices facing HIV positive women living in regions severely affected by AIDS like Kisumu. An HIV-infected woman may decide to be sexually abstinent, be sexually active with or without the use of condoms, undergo sterilization, become pregnant, terminate her pregnancy, or deliver her baby and refrain from breast feeding. These reproductive choices are difficult to make because of cultural, legal, religious, marital, economic, and psychosocial factors. The decisions women make about their sexuality (abstinence, use or disuse of condoms) have an impact on the spread of HIV and are indirectly related to the increase of AIDS orphans in the country. On the other hand, the decisions they make about child bearing (sterilization, conception, continuation of pregnancy, and abortion) and about breast feeding may have a direct effect on the number of AIDS orphans in the country. These are tough decisions to make particularly in regions like Kisumu where most of the sexually active women are unaware of their sero-status, illiterate, and poorly informed about contraception. The only groups of women who might be aware of their HIV status are those who have lost their boyfriends or spouses to AIDS, or those who are at the symptomatic stage of the disease.

There is a widespread belief in many African countries that injected medication is more effective than oral medication. Patients tend to be disappointed when a clinic issues oral medication instead of an injection. Some people even request injections if they are not offered. Unfortunately, in some cases the people giving injections are inadequately trained in aseptic technique, and sometimes there are no facilities for adequate sterilization of needles and other injection equipment. Reuse of disposable needles and syringes is common even in well-run clinics and hospitals. Thus, there is no doubt that some people in Africa have contracted HIV through such medical malpractice (Duh, 1991).

The need for blood transfusion is higher in Africa than in other continents particularly because of malnutrition and endemic diseases. Malnutrition and endemic diseases such as malaria, tuberculosis, and sickle cell anemia lead to anemia that may require transfusion. Blood transfusion is often required during delivery of babies. Many poor pregnant women do not have enough nutrient intake to increase their blood volume during pregnancy. Blood transfusion is quite dangerous in terms of HIV transmission in Africa because many countries lack appropriate resources for effective screening of blood before transfusion. Furthermore, young adults are the most likely to donate blood, and it is they who have the highest prevalence of HIV infection (Mati, 1997).

The traditional birth attendants and other women who assist deliveries may be at risk for being infected with the AIDS virus. In Africa, 35 per cent of deliveries are attended by persons other than trained health care workers. Women who participate actively in delivery, using sharp implements to cut the umbilical cord and their hands to handle the placenta, may be exposed to large quantities of contaminated blood and body fluids if the mother is seropositive. If they have eczema or open wounds on their hands and do not use gloves for protection, the virus in the mother's blood could come into contact with their own body fluids. Conversely, if the traditional birth attendant is seropositive, not using protective materials and accidentally cutting herself during the procedure could result in the transmission of the virus to the mother (Bruyn, 1992). Finally, the role of skin scarification and ritual operations using contaminated equipment in HIV transmission has not been fully evaluated.

Rapid spread of HIV in Africa. There are several factors that have contributed to the fast spread of HIV in Africa. First, heterosexual transmission of HIV in Africa accounts for the epidemic's rapid spread. For a long time men and

women on the African continent engaged in sexual intercourse without wearing latex sheaths—an activity most conducive for the transmission of the deadly virus. There are indications that some people are still engaging in unprotected intercourse with commercial sex workers in sub-Saharan Africa. A recent study in Nigeria indicates that men preferred the privacy of buying condoms to collecting them free from public clinics. If they couldn't afford them, they took chances with unprotected intercourse with prostitutes (Associated Press, 1999, September 18).

Second, cultural practices regarding remarriage contribute significantly to the rapid spread of AIDS. In most parts of Africa when one dies, especially when one is young, the widowed spouse remarries. Therefore, for the most part, when AIDS patients die, it is automatic for the remaining spouses to remarry through whatever available method (e.g., inheritance of wives by relatives of the deceased). Such cultural practices have major implications for the spread of the virus (Onyango & Walji, 1988).

Third, the economic disparity between men and women leads to a rapid spread of the lethal virus. In Africa most societies are patriarchal, where men control economic and other resources. Men who control more resources are able to maintain sexual relations with a greater number of women. This includes more permanent relations with wives and mistresses, as well as less permanent ones with prostitutes, bar-girls, and casual girlfriends. Women may be rewarded in cash or gifts for sexual favors, a practice which does not necessarily make them prostitutes. A good deal of female sexual behavior in Africa can be viewed as economic survival and adaptation to patterns of male dominance (Green, 1988). These women can protect themselves from pregnancy with contraceptives (e.g., birth control pills), but they have no way of protecting themselves against HIV infection from their sexual partners. Convincing men to wear condoms is an objective very few poverty stricken women can accomplish.

Fourth, long separation between husbands and wives imposed by economic disparity between urban and rural areas contributes to rapid spread of the scourge. A large number of men are forced to leave their wives at their rural homes and travel great distances to urban centers in search of work. The often many months or years of long separation are interrupted by short holiday visits. It is during such long separations that the HIV penetrates the bloodstream of the husband or wife from a casual relationship. This form of migration has resulted in a disproportionate concentration of males in cities, a condition which encourages casual and commercial sex (WHO, 1994).

Fifth, fear of AIDS in men has made divorced or married men turn to young girls for sex. Young girls constitute the majority of the out-of-school youth, and some of them are driven into prostitution because of poverty. Unfortunately, young girls are biologically more vulnerable to HIV infection. They get easily infected with the virus because their sexual organs are still developing and are easily injured during sex. For instance, a young girl with an immature cervix (cervical ectopy) is likely to be injured if she engages in sex, and such injury forms an entry point for the virus. Moreover, young girls lack the negotiation skills needed for self-protective behaviors during sexual encounters with older and experienced men—often they have less power to refuse sex or insist on condom use (Mungai, 1998).

Curbing the Spread of HIV in Kenya

About 1.3 million sexually active Kenyans aged between 15 and 25 years live with AIDS (Staff, 1999, September 21). Reducing the spread of HIV in Kenya and in other parts of Africa is probably the major challenge facing social and medical scientists in this century. Perhaps the best indicator that Kenya has a long way to go in meeting this challenge is the fact that the World Bank has granted the

government KShs. 2.3 billion (US\$ 30 million) for an AIDS awareness campaign (Xinhua, 1999, September 23). That is a lot of money and an indication that the Bank appreciates that Kenya has a lot of leg work to do before it can say that the AIDS message has been absorbed. In the absence of a vaccine or cure, the only way to stem the HIV epidemic is by breaking the chain of viral transmission. In a country where the transmission of HIV is largely sexual, breaking the chain would mean asking people to alter their sexual behavior. However, asking people to modify their sexual behavior is a form of disease control that has never been successful in the history of mankind. Sex is a private behavior every normal adolescent or adult wants to engage in, and the only temporary limitation is finding a consenting partner (Bartlett & Finkbeiner, 1996).

Prevention efforts designed to stop the spread of the virus in Kenya and the rest of Africa are often permeated with demands that only “moral” means be advocated (Daniels, 1995). For instance, in Kenya, the government has aggressively refused to institute sex education programs in schools for fear that it will encourage promiscuity in school children. Policy makers in Kenya believe that teaching young people about sexuality and contraception encourages early sexual activity. In fact, any attempt to introduce condoms in schools would not move one step forward. Government officials who do not possess research data believe that the teachers have some “magical” powers of convincing all students that “only abstinence” works. This is ironic because many teachers in Kenya have died of AIDS.

Parents are also firmly opposed to the introduction of sex education in schools. They cling to the traditional belief that sexual behavior is a private business and should not be publicly discussed in schools. They believe that those who advocate for the use of condoms are only interested in replacing social values and ethics education to the youth with condoms. Furthermore, they argue that

condoms are not safe, only abstinence is truly safe (Mungai, 1998). The Catholic church in Kenya is also against the introduction of sex education in schools. The Right Reverend John Njue said that the church will fight to the hilt the introduction of sex education in schools (Staff, 1997, June 23). Moreover, church leaders representing the National Council of Churches of Kenya, recently failed to recommend the use of condoms as an effective method of fighting AIDS in Kenya. The leaders instead resolved to promote the biblical model of a Christian family where children grow up with parents as role models in a bid to fight AIDS (Kithi, 1999, April 8). The president of Kenya, Daniel arap Moi, is also against the use of condoms as a means of curbing the spread of HIV in the country. He recommended sexual abstinence as the surest way to avoid contracting the killer virus. He also suggested that Kenya should adopt a ten-year period of sexual abstinence to stop the spread of AIDS (Tanui, 1999, September 24).

By refusing to endorse the introduction of sex education programs in schools in Kenya, government officials, parents, and the church have rejected the current belief that “knowledge is our best weapon against AIDS.” They have refused to realize that in the absence of any medical cure for AIDS, injection of vital information on HIV/AIDS is the remedy. The practical importance of knowledge is that it allows individuals to assess their own personal risk. The fear that sex education knowledge will encourage early sex in schoolchildren may be unwarranted. A review of 35 sex education studies in the US, Europe, Australia, Mexico, and Thailand, which was sponsored by the World Health Organization, found that not a single study gave any evidence that sex education programs led to earlier or increased sexual activity by the young people who did engage in sex. The review showed that sex education programs can actually encourage young people to postpone penetrative sexual intercourse, reduce their number of sexual contacts, or engage in safer sex (Baldo, Aggleton, & Slutkin, 1993, June).

While Kenyans are still debating about condom use and whether or not to introduce sex education in schools, a neighboring country, Uganda, has introduced sex education in learning institutions and has moved a step forward by initiating a voluntary door-to-door HIV screening program. The Ugandan government aims at informing people about behaviors that promote the spread of HIV. Furthermore, it wants to test as many people as possible because it believes that once people know their HIV status they are more likely to effect behavioral change (Staff, 1999, April 16). As the debate about sex education and use of condoms rages in Kenya, the virus is spreading, 420 Kenyans are dying daily from AIDS and the number of AIDS orphans is increasing daily (Tanui, 1999, September 24).

Children Orphaned by AIDS in Kisumu

A recent study by USAID reported that there will be 40 million orphans by the year 2010 in sub-Saharan Africa, largely because of AIDS (Staff, 1999, August 14). The UNICEF reported that there were 300,000 AIDS orphans in Kenya in 1996. This number will increase to 700,000 by the year 2000 and to almost 1.5 million by the year 2005. A recent study by the Ministry of Health reported that there are one million HIV positive children in Kenya (Staff, 1999, April 14). A large number of these children are AIDS orphans. These figures indicate that the number of AIDS orphans in the country is increasing exponentially. The exact number of AIDS orphans in Kisumu district is unknown and may not be known because this number is changing daily. The number of AIDS orphans in this district could be quite high because this district leads in HIV/AIDS cases in the country.

There are reports that within families where both parents are HIV infected, there are many children who are uninfected (Anderson, 1995). These children outlive their infected parents and siblings, and they face problems associated with

orphanhood. The uninfected children may provide physical and psychological support to their parents and siblings before they die. This role reversal with the parents sets up expectations for the child that can only be achieved at the cost of one's own development and childhood activities. The uninfected children face greater life problems after their parents die of AIDS. They are at high risk for a wide range of developmental problems, as well as engaging in behaviors associated with HIV transmission (UNICEF, 1990).

Children orphaned by AIDS have been found to be different from children orphaned due to other causes. The AIDS orphans are more likely to be living in low income areas, are on average younger than children orphaned by other causes, and are more likely to be out of school than children orphaned by other causes (Foster et al. 1995). This research finding by Foster et al. (1995) that AIDS orphans are more likely to be living in low income areas has been reported in other studies. According to Obel (1995), on average, AIDS patients earn more than average Kenyan citizens by about 30 per cent. In 1991, the national average annual income of an employee in Kenya was Kshs. 14,675 (\$210). The average annual income of AIDS patients at that time was Kshs. 19,200 (\$275). Evidently, therefore, AIDS strikes those with higher income and better-paid jobs than the average citizen. Furthermore, a survey by NASCP (1996) found that most families that agreed to foster AIDS orphans were living below the poverty line, whereas the wealthier relatives tended to maintain minimal links with the orphans. When these wealthier families offered help, it was from a distance.

There are also reports that AIDS orphans may fail to get support and a safe place to live. According to Ryder et al. (1994) these children are susceptible to neglect because their parents are accused of promiscuity. Because most people assume that parents who died of AIDS were promiscuous, they are likely to generalize their contempt toward their children, resulting in almost certain

discrimination against them (Bledsoe, 1990). This form of discrimination is unfortunate because these children are innocent and because the disaster confronting AIDS orphans is no less than that experienced by orphans who bear the burdens of war, accident, or other family illness and death. The burdens these children bear are multiple, concurrent, and relentless. For example, significant changes in their home lives, and eventually even in their custody are inevitable (Geballe, Gruendel & Andiman, 1995). Moreover, a survey conducted in Kenya by NASCP (1996), showed that AIDS orphans in Kisumu and in other parts of the country were unique in that they were often not supported in their grief by idealized societal portrayals of their dead parents, and that some people fear adopting AIDS orphans because some of them are HIV positive.

HIV Status of AIDS-Orphaned Children

AIDS-orphaned children are either HIV positive or negative. The proportions of these two groups of AIDS orphans have not been determined in many countries including Kenya, although there are reports that most AIDS orphans are uninfected with the virus (Levine, 1995). In Kenya, there is one orphanage that admits only HIV-positive AIDS orphans. Nyumbani orphanage is located in Nairobi. This orphanage was founded by Fr. Angelo D'Agostino in 1992. The orphanage is funded by the Washington, DC based organization—Children of God Relief Fund. The orphanage is currently housing 50 AIDS orphans ranging from 7 months to 13 years in age. The orphanage is housing this small number of orphans not because there is shortage of HIV positive orphans in the country but because it has limited facilities. It receives at least four referrals every week and there is a large number of HIV positive orphans on the waiting list. This orphanage meets medical, educational, nutritional and psychological needs of

the orphans. In addition, the orphanage attempts to find adoptive homes for the orphans who convert to HIV negative status (Caroline, 1998, January 26).

Research data shows that 30 to 40 percent of infants born to HIV-infected mothers will be infected with HIV and subsequently develop AIDS and die. Almost 25 per cent of the infected infants will die before their first birthday, and most of them will develop AIDS and die within two years (Kengeya-Kayondo et al., 1995). However, recent research evidence in Kenya shows that more children born with HIV now survive beyond the age of ten years. This new trend poses a threat to the management of AIDS in the 5 to 14 years age bracket, which was previously perceived as the hope for the next millennium, since it was largely free of the disease (Staff, 1999, May 19). This finding puts the adoption of AIDS orphans in jeopardy because potential caregivers now have a legitimate reason to fear having an AIDS orphan live and play with their biological children for s/he could transmit the virus to them through an open wound. It also reinforces the fear some people have about adopting AIDS orphans because they believe that they are HIV positive (Levine, 1995). This belief about the HIV status of AIDS orphans is a source of contempt towards the orphans. Janet Oduol of the Society of Child Welfare of Kenya reported that neither orphanages nor adoptive parents were willing to accept Kenyan children orphaned by AIDS, whether or not they were HIV-positive (UNICEF, 1991).

Adoption of AIDS-Orphaned Children

The term “adoption” refers to the legal transfer of responsibility for parenting a specific child from one adult or couple to another adult or couple. In the US, adoptions are arranged by governmental and private agencies, and married couples are preferred by adoption agency staff. Single parents tend to adopt children for whom placement has been more difficult (Grovetant & Kohler, 1999).

In contrast, adoption in Kisumu district is arranged informally through relatives, family friends, and church members. The marital status of the potential caregivers is not a major factor in determining adoption priority in Kisumu.

In a typical African setting it has been difficult to define “an orphan” because the prevailing system of extended family ensured protection of children even after the death of biological parents. The extended family played an important role in mitigating the adverse consequences of orphanhood through the distribution of parenting costs and responsibilities across a large number of family members. Bledsoe and Gage (1987) reported that, for a long time, in much of sub-Saharan Africa the need for adoption in the formal administrative sense was preempted by extended family systems taking in the offspring of kin who die. Grandparents, brothers, or sisters, and others in the community have traditionally assumed the responsibility of caring for orphaned children, according to local kinship systems and traditions. However, today, children whose parents have died of AIDS are faced with several problems touching on their daily livelihood and survival.

By killing both parents, AIDS destroys the family, which is the most important institution in children’s lives. This scourge dismantles an intense and irreplaceable bond between parents and children, a bond that is critical for normal social, mental, and emotional development in human beings (Levine, Micheals & Back, 1996). The desperate orphans left behind often have problems in finding suitable places to live. The placement and custody of AIDS orphans and other needy children is now a worldwide problem and is not restricted to Africa or to the developing world. For instance, the US faces many problems finding homes for children who are either abused, neglected, or orphaned. Such children are placed by the Department of Social Services into three main types of out-of-home care: regular family foster care, group care, and kinship care (Rosenblith, 1992).

The problem of placement of AIDS orphans is greater in Kenya where there is no law protecting the rights of children. This country has no law on child abuse and neglect, and has no legal obligation to meet the basic needs of orphans after their parents die. Kenya has so far failed to look after its children both legally and materially. Kenya is one of the 19 countries in Africa that has neither signed nor ratified the African Charter of Child Welfare and Rights. It is also interesting to note that Kenya has never adopted the United Nations Convention on the Rights of a Child (Staff, 1999, September 15). In the absence of laws governing the rights of children, the Kenyan government has legally left its orphans on their own to struggle for survival. Some of these children are adopted informally through relatives, family friends, and church organizations. The adoption process is informal because there are no legal papers or obligations involved.

There is a paucity of research data on the informal adoption of AIDS orphans in Kisumu district. The criteria used by caregivers during the adoption process have not been established. However, Levine et al. (1996) reported that in Africa, older children might easily find a place to go because they are expected to work alongside other family members. In contrast, in the industrialized world, it is usually easier to find a home for babies than for older children, particularly teenagers, who are seen as presenting potential behavior problems.

The question about the support caregivers receive from the government is worthy of investigation because there are reports that HIV positive parents in Kisumu, and in other parts of the country worry endlessly about the future of their children. It is probable that these parents worry about the future placement of their children for two reasons. First, their children will not receive any support from the government after they die. Second, there are indications that members of their extended families are reluctant to take in orphans because of the constraints placed on their households by the difficulties of the general economic climate. People feel

that they can barely feed, clothe, and send their own children to school, let alone assume additional responsibility for orphans.

Finally, there are reports that the most difficult task facing HIV positive parents before they die is to make a choice regarding the future placement and custody of their children (Draimin, 1995). In Kisumu district, whether or not the parents made a decision about the future destination of their children, these children end up in either the extended families, guardians' homes, or orphanages. A better understanding of these residential destinations for orphans requires a brief description of the social organization of the Luo in Kisumu.

Social Organization of the Luo in Kisumu

A description of the social organization of the Luo is necessary for understanding this study for five major reasons. First, it guards against the common tendency to use Western social categories to understand and investigate a problem in a non-Western setting. Second, it spells out the destinations of the orphans, thereby alluding to the caretakers of AIDS orphans in Kisumu. Third, it provides important hints about the meaning of the term "extended family" as applied to the Luo. Fourth, it provides an overview of guardianship of AIDS orphans in the district. Finally, it enables us to understand how cultural practices among the Luo affect the solution to a common problem like orphanhood.

The Luo are famous in Africa for their strong patrilineal social organization (Gutkind, 1977). According to Wilson (1961), Luo social organization exists and functions in much the same ways as it did prior to European ascendancy. The Luo social organization consists of basic groups that mold the character of every *Jaluo*,¹ no matter how sophisticated. The Luo kin types, like those of the Iteso of Kenya, may be divided into three categories: agnates, maternal kin, and affines. Agnates

¹ *Jaluo* is a Luo word for a person from the Luo ethnic group.

are those people who are related by ties of patrification. Maternal kin are all people related through ties of matrification. Affines are related through marriage (Karp, 1978). Although these three categories of kin exist, agnation is the most important kinship relationship because the Luo practice a patrilineal descent system (Gutkind, 1977). It is therefore the patrilineal social organization of the Luo and how it relates to the support of AIDS orphans that will be discussed here.

Patrilineal Social Organization of the Luo

The Luo practice patrilocality, in which, the bride leaves her parents' home to live with her husband's family. Traditionally, Luo men pay bride wealth to the bride's family before marriage. Any child born to a marriage legitimized by bride wealth belongs to the father. Divorced or deceased Luo women leave their children with the husband. When both parents die, say of AIDS, children are usually left with the husband's kin. A widow is inherited by the husband's brother or cousin.

An examination of the patrilineal social organization of the Luo invokes two units of analysis: *lineage* and *household*. The concept of *lineage* implies a politico/jural unit with collective ownership of resources, and collective responsibility in law (Horton, 1972). On the other hand, the concept of *household* implies a domestic unit with decision-making autonomy about production and consumption (Hopkins, 1973). Both concepts are relevant in understanding the destinations of the AIDS orphans and will be used in the analysis of the organization of the Luo.

Lineage units of the Luo social organization. The Luo ethnic group (*oganda*) is made up of a series of agnatic lineages all of which can be traced to a common eponym, Ramogi (Wilson, 1961). This claim of a common eponymous origin underscores the fundamental principle of Luo social structure:

the bond of kinship. The largest grouping of Luo claiming common agnatic descent is the subtribe. A subtribe may consist of one dominant, exogamous lineage with attached stranger lineages (*jodak*). Sometimes the subtribe consists of several lineages of roughly equal status (DuPre, 1968). The first major division of each subtribe is *dhoot*. A subtribe may coincide with a *dhoot* or it may be multiples of the *dhoot*. Marriages among the Luo observe exogamous boundaries and are prohibited between men and women from the same *dhoot* (Parkin, 1978).

The *dhoot* is subdivided into smaller units called *libamba* (pl. *libembini*). A dozen or more *libembini* make up a single *dhoot*. The *libamba* is 5 to 7 generations in genealogical depth, and the members of one cooperatively share agricultural land (Wilson, 1961). The *libamba* segment is further subdivided into units called *keyo*. The *keyo* is 4 generations in depth, tracing descent from a common great grandfather. The *keyo* is subdivided into *Jokakwaro*², groups sharing a common grandfather. *Jokakwaro*, is 3 generations in depth. The *Jokakwaro* segment is subdivided into smaller units called *Jokawouro*³, formed by a man, his wives, and their children. Within this group, the children of each woman identify themselves as *Jokamiyo*⁴ (Ocholla-Ayayo, 1976).

Household as a unit of the Luo social organization. The term *household* is defined by Schapera (1950) as the smallest well-defined unit in a social system of a group of people occupying the same enclosure of huts. It consists of a man with his wife or wives, their unmarried children, and married sons. The term household translates into a Luo homestead (*dala*). The Luo have a clear distinction between a homestead (*dala*) and a house (*ot*). *Dala* is a traditional

² *kwaro* is a Luo word for grandfather

³ *wuoro* is a Luo word for father

⁴ *miyo* is a Luo word for mother

homestead established through a ritual that involves the man, his eldest son, his wife, and his father (Cohen & Odhiambo, 1992).

The Luo use the term *ot* to refer to a rented, purchased, or constructed house in town. It is also used to refer to a dwelling unit within *dala*. The Luo employed in towns maintain two types of residential units: urban houses (*ot*) and rural homesteads (*dala*). The Luo men dwelling in urban households generally use their wives, children, and close agnates to look after their rural homestead and land. This is made possible by the circulation of women and children between the urban and rural households. Polygyny among the Luo has enabled men to build and maintain a viable bridge between a full-time career in urban employment and their interest in agricultural land at home (Parkin, 1978). By the Luo custom co-wives do not live in the same house. A polygynist household in town is usually a basic nuclear family—consisting of a man, a wife, and children, who are periodically replaced by a co-wife and other children coming from the rural home. It is also important to note here that the Luo do not bury dead bodies in their urban households or in a cemetery. The dead bodies are buried in the rural homesteads. It is the moral obligation of members of the extended family (usually *dhoot*) to transport a corpse to the rural homestead for burial, and to meet other funeral expenses. Any orphans left behind are usually absorbed by the extended family.

The extended family system as applied to the Luo refers to residential arrangements whereby the care provider and the orphan come from the same *dhoot*, *libamba*, *keyo*, *Jokakwaro* or *Jokawouro*. On the other hand, orphans who fail to get support from the extended family members are absorbed by guardians' homes and orphanages. A guardian is usually a person from a different *dhoot* or from another tribe (*Jamwa*) who has voluntarily accepted to take care of a needy child. Thus, a guardian is a non-member of the extended family, a person with no blood

relations with the adoptee. In the next section of this review, these three residential destinations of AIDS orphans are examined in detail.

Residential Destinations of AIDS Orphans in Kisumu

A residential destination is defined in this study as any institution of care where orphans end up after their parents die. In Kisumu district, residential destinations of orphans may be better classified into extended families, guardians' homes, and orphanages. The effects of these destinations on orphans were investigated because important questions are being raised about where AIDS orphans go after their parents die. For instance, Bledsoe (1990) asked: Where do AIDS orphans go and who actually takes on the economic burden of raising them? Are they sent to live with the members of the extended family far upcountry, away from schools and health facilities? Addressing the first question, Levine, Michaels, and Back (1996) observed that when both parents have died of AIDS, the children are most often taken in by members of the extended family.

Levine et al. (1996) claim that orphans are most often taken in by members of the extended family may not be an accurate description of the situation in Kisumu. There are indications that extend family system can no longer care for the large number of orphans in Kisumu. The extended family system may provide homes to some AIDS orphans but may be unable to offer them quality support because of its own share of socio-economic pressures from an already existing large family. As a result the orphan may be denied adequate food, educational opportunities, as well as health care (Mati, 1997). In some cases the orphans are living outside the extended family structure, in guardians' homes and in orphanages (NASCP, 1996).

Extended Families for AIDS-Orphaned Children

The extended family system in Africa is comparable to kinship care in other parts of the world. It is a form of support system primarily based on blood relationship. The extended family system as a residential destination is an informal arrangement whereby the orphans are taken care of by their relatives. Research data on extended family care are scarce, and relatively little on AIDS orphans in Africa has appeared in the literature. According to Dubowitz, Feigelman, and Zuravin (1993), the extended family system has received the least attention from researchers, and very little information has been published on how children fare in this arrangement. Most studies in the developed world have concentrated on foster and group care. Extended family care requires research attention given the increasing number of orphans needing care.

The term extended family is commonly used to describe African families, particularly when referring to people belonging to a common lineage. According to Siegel (1996), this is mainly because the Africans themselves generally use the term family to denote the extended family, which refers to several generations of relatives living at home and away. According to Ayisi (1979), extended family forms the basis of all social co-operation and responsibility. It acts as a social security for the members of the group. Webster's (1995) college dictionary defines extended family as a kinship group consisting of a married couple, their children, and various close relatives. But, the key question is: What does the term extended family mean as applied to the Luo in Kisumu district? Does it correspond to *dhoot*, *libamba*, *keyo*, *Jokakwaro* or *Jokawuoro*? According to Siegel's description, it may be taken to mean, *dhoot*, *libamba*, or *keyo*, because these are the lineage units that consists of several generations. On the other hand, if the definition by Webster's college dictionary is adopted, then the term extended family probably

refers to *Jokakwaro* and/or *Jokawouro*, because these are the lineage units that are composed of close relatives.

My literature search for the lineage unit in the Luo social organization that corresponds to an extended family did not produce any results. The closest I came to finding the answer is the description by Parkin (1978) that *dhoot* is a giant extended family whose members must only marry outside their own descent group. So, in this study, Siegel's (1996) definition and Parkin's description of extended family were adopted. The term extended family was therefore used in its broadest sense to refer to residential arrangements where the caretaker and the orphan come from the same *dhoot*, *libamba*, *keyo*, *Jokakwaro*, or *Jokawouro*.

The extended family structure absorbs most of the AIDS orphans in Kisumu. The Luo have a well-structured extended family system, which is a reflection of their strong social organization. AIDS orphans are often sent to stay with their grandparents and other members of the extended family in the rural areas. This is a common practice particularly when parents die of AIDS in urban centers. Members of the extended family may accept the cost of upkeep of the orphans because they have been led to believe that it is their moral obligation. However, there are many cases where members of the extended family accept to care for the orphans when they are actually incapable of providing quality care.

There are many questions about the extent to which the extended families are meeting the needs of the orphans. How well are they meeting the educational and basic needs of these orphans? Although there are no research data on this question, it is assumed that AIDS orphans absorbed in the extended family are raised in a safe and supportive community (Groce, 1995). Typically, the orphans receive support from members of the extended family living in the parent's or grandfather's homestead (i.e. *Jokakwaro* and *Jokawuoro*). But, they may also be

accepted to stay with members of the extended family living outside the parental or grandparental homestead (i.e. *dhoot*, *libamba*, and *keyo*).

There are reports that in some cases the members of the extended family encourage the orphans to continue staying in their parental home after their parents die of AIDS. Such cases occur when the parents die after establishing a homestead (*dala*). In such homesteads, the older siblings are expected to assume the responsibility of caring for surviving brothers and sisters, though they receive material, social, and psychological support from members of the extended family. Traditionally, the Luo discourage closure of a *dala* once it has been established. This arrangement enables the orphans to protect their parents' property, particularly land.

Research conducted in other parts of Africa about the effectiveness of extended families in meeting the basic needs of orphans has produced mixed results. Ryder et al. (1994) reported that the presence of a concerned extended family member minimizes any adverse health and socioeconomic effects experienced by AIDS-orphaned children. On the contrary, Seeley, Kajura, and Bachengana (1993) reported that the extended family as a "safety net" for people with AIDS has gaps, and the net for dependent orphaned children after the death of parents is even looser. While many families have absorbed orphans out of love, custom, or moral obligation, they may not be able to do so indefinitely. This practice may no longer be feasible because of the large number of children orphaned by AIDS and for economic reasons.

In a survey conducted in Uganda, by the Ministry of Health (1993), it was found that the number of orphans in households in the extended family varied from 1 to 17, and that women were the most common caretakers. It was concluded that there was a need for community based programs to support extended families in bringing up the orphans. Barnett and Blaikie (1992) reported that, when dealing

with issues related to where AIDS orphans go, the assumption that the extended family will absorb them must be put aside. The extended family can no longer pick up the pieces when disaster strikes. There is no doubt that responses to abnormal circumstances like coping with a large number of orphans has increased the extent to which people act in ways that are inconsistent with their customs and values. For instance, upon the insistence of the dying parent, orphans may also be taken in by friends outside the extended family in guardians' homes.

Guardians' Homes for AIDS-Orphaned Children

Legally a guardian is a person entrusted with the care of another person, such as a minor. Among the Luo, guardianship of needy children rarely goes through the legal process of signing agreement papers. A guardian is usually a person from a different *dhoot* or from another tribe (*Jamwa*) who has voluntarily accepted to take care of a needy child. Thus, a guardian is a non-member of the extended family, a person with no blood relationship with the adoptee. A guardian may accept to care for an orphan upon request made by the dying parent(s). In some cases, a guardian may also offer to care for an orphan after the death of the parents, particularly if he or she feels that the orphan is not getting quality care from the extended family members. In such cases, the potential guardian would approach the members of the extended family about his or her intention to care for the orphan.

Traditionally, a male guardian is marriageable to a female adoptee. A mature female adoptee may marry a male guardian or a person from the guardian's *dhoot* or a person from another *dhoot*. On the other hand, a male adoptee (*misumba*) may inherit property such as land and cattle from the guardian and becomes a member of *Jokakwaro*. He may also choose to return to his original homestead (Ochola-Ayayo, 1976). Since the advent of AIDS, some orphans have

been absorbed into the guardians' homes. However, guardians' homes as an alternative arrangement for orphans have not been investigated in Kisumu district. There is no report in the literature on how AIDS orphans fare on in this residential arrangement in Kisumu. An AIDS orphan who fails to get accommodation in the extended families and guardians' homes may be accepted into one of the 13 orphanages in Kisumu district.

Orphanages for AIDS-Orphaned Children

An orphanage is an institution for the housing and care of orphans. The orphanages in Kisumu generally offer support to children whose parents have died. However, they also offer accommodation to a few children abandoned by their parents after birth. The orphanage system is not well developed in Kenya, probably because this country has never previously experienced a disaster that rendered thousands of children homeless. In Uganda, the orphanage system is fairly well developed because this country had wars that rendered many children homeless. Although the orphanage system in Uganda is well developed, a study by Hunter (1990) reported that orphanages are insufficient in capacity for the numbers of children needing help. The study called for the establishment of more orphanages to cater to the ever increasing orphans in the country. The need to establish orphanages to absorb the needy children is even more urgent in Kenya where the system is not well developed.

There are signs that the orphanage system in Kenya is beginning to grow as a response to meet the needs of the thousands of children needing help after their parents die of AIDS. For instance, there was no orphanage in Kisumu district prior to the late 1980s. Today, there are 13 orphanages in the district—all started operating in the late 1980s and early 1990s. These dates correspond to the period when there was a high death rate and a rapid increase in the number of orphans in

the district caused by AIDS. I visited the 13 orphanages in Kisumu district during my research. None of these orphanages is run by the government. They are run by individuals and some of them are affiliated with religious organizations. For instance, Covenant Family House is managed by an English lady, who receives funds from a church organization in Britain to run the orphanage. Most of these orphanages are full to capacity and are unable to admit more orphans because of limitations imposed by physical facilities.

The orphanage systems in Kisumu and in other parts of the country are still in the formative stage. It is unknown how well the new orphanages in Kisumu will meet the needs of orphans in the district. No judgment has been passed on how effective the orphanages are in meeting the needs of the orphans. In Uganda, where the orphanage system is well developed, a survey (Ministry of Health, 1993) revealed that most Ugandans were opposed to the creation of new orphanages to care for needy children. They felt that orphanages should be considered as the last resort to the solution of the orphan problem in the country. They argued that orphanages isolate children from communities and make it difficult, if not impossible, for them to return and be accepted as full community participants. Furthermore, most respondents interviewed during the survey preferred community-based programs for helping orphans to orphanages.

These sentiments expressed by Ugandans about orphanages agree with those reported in the US as early as 1880 by Charles Loring Brace. He noted that institutional care did not prepare children for life in the community and that most of children did not want to go to orphanages. In the US, orphanages were criticized by the public for their use of harsh discipline systems, their administrative freedom to discharge children arbitrarily, their overcrowding, and their inability to accommodate the growing number of children in need of care as a result of immigration and the Civil War. More recently, Rosenblith (1992) reported that the

most severe case of maternal deprivation probably occurs in orphanages. Because care in orphanages in the US is provided by paid caretakers who often have a large number of children to care for and who work in shifts, the substitute care seems to be quite different from that a mother would provide. Children in orphanages are also often deprived of other sorts of environmental stimulation that home-reared children enjoy. As a result of these factors, orphanages have traditionally been a solution of last resort. Orphanages in industrialized countries have largely been replaced by nonrelative foster care, though congregate care institutions continue to exist in other parts of the world.

This study was the first attempt in Kisumu to assess the effectiveness of the orphanages in meeting the needs of the AIDS-orphaned children. The study contributed to our better understanding of the effectiveness of the orphanages in preparing these children for the challenges awaiting them in society by comparing school dropout rates, grade repetition, anxiety, and the quality of caregiver-orphan relationship of the orphans living in the orphanages to those staying in extended families and guardians' homes.

Needs of AIDS-Orphaned Children

The needs of AIDS orphans have not been fully investigated because of the recency of the HIV epidemic. However, Makufa (1995) identified five broad needs of AIDS orphans: educational, psychological, physical, spiritual, and legal. The needs of these children are numerous and can only be effectively investigated by a host of professionals—educators, psychologists, physicians, nutritionists, and social workers (Levine, 1995). These children's needs are worthy of investigation because there are reports that orphans dwelling in different destinations differ in their need satisfaction, and that the extent to which the orphans' needs are met depends on the quality of care they receive from their destinations (NASCP, 1996).

Foster et al. (1995) recommended that research on the needs of AIDS orphans should to be undertaken. This study concentrated on the educational and psychological needs of AIDS orphans in Kisumu. These needs were chosen because they are integral to the development of AIDS orphans, and they have not been adequately investigated.

Education of AIDS-Orphaned Children

Perhaps education is a top priority for AIDS orphans in Kisumu who are expected by the society to compete among themselves and with other non-orphan children for the limited job opportunities available in Kenya. According to a survey conducted by NASCP (1996) in Kisumu and in other parts of Kenya, education of AIDS orphans inevitably suffers as they are faced with heavy domestic responsibilities and lack of resources for school fees. This finding about the importance of educational need for orphans in Kisumu concurs with the report of a survey conducted in Uganda by the Ministry of Health (1993). In Uganda, the highest priority needs for AIDS orphans in descending order were: school fees, scholastic materials, and feeding. It was also found that short-term needs for clothing, medical care, food, and housing were generally better met than the long-term needs for education and skills training.

AIDS-orphaned children are at high risk for educational failure because they are likely to be adopted by caregivers of lower income. These children are also more likely to join child labor as a means of survival after dropping out of school. Florida Statutes (section 228.4) defines a dropout, “as a student who leaves school for any reason except death before graduation or completion of a program and without transferring to another public or private school or other education institution” (quoted in Farmer and Payne, 1992, p. 3). This definition is broad and applies to AIDS-orphaned children who drop out of school in Kisumu. Research

show that there are about 80 million child laborers in Africa. There are reports that more than 2.8 million people in eastern and southern Africa die of AIDS annually, leaving millions of orphans behind without care. These children drop out of school and join the cheap child labor as a means of survival (Wayetah & Gakuo, 1999, September 15)

Given the stigma associated with AIDS, as well as the large number of AIDS orphans in Kisumu district, it is important to assess the educational status of these children in their residential destinations so that practical, effective intervention programs can be developed and targeted toward the children. This study examined the educational status of AIDS orphans by assessing the school dropout rates and grade repetition of these children. School dropout rates and grade repetition were chosen for investigation because research shows that children who have had disruptions in their family lives are more likely to drop out of school and repeat a grade (Plummer, Lineberger, & Graziano, 1986). According to the survey conducted by NASCP (1996), some of the AIDS orphans who were burdened with heavy domestic responsibilities indicated that they needed relief from these activities so that they could concentrate on their studies. Of the 441 AIDS orphans of school-going age interviewed, 54 per cent had already dropped out of school. Interviews with their caregivers indicated that only 5 per cent of the orphans were expected to complete Form 4 level of education. Grade repetition, which is the practice of requiring students to remain at the same grade or year level for two consecutive years, was found to be common among AIDS-orphaned children. Repetition as a corrective strategy for poor academic achievement is widely used throughout the world (Finlayson, 1977).

Psychological Status of AIDS Orphans

The death of a parent is a psychological trauma that threatens the child's social and psychological development. According to Furman "no other event is comparable in psychological significance because the death of a parent deprives children of so much opportunity to love and be loved and confronts with a formidable adaptive task" (cited in Collins-Jones, 1997, p. 14). Death of a parent disorganizes what Bowlby (1980) called the "internal working model" of the child. Developed in early life, the internal working model is composed of mental representations of the self, other, and of the relationships that direct attention and organize memory in a way that guides interpersonal behavior and the interpretation of social experience. Conceptually, then, the death of a parent means that children face a need to reorganize existing elements and create new components in their internal working models. How well this need is satisfied depends on the quality of relationship an orphan establishes with the caregiver. Orphans who do not establish a supportive relationship with their caregivers are unable to create new components in their internal working models and are at risk for poor psychological adjustment.

Loss of a parent to AIDS is also associated with more psychological disturbances in children because it is compounded by the number of losses within one family, the social stigma associated with AIDS, and the challenges to the family's stability. Often family members have not had enough time to mourn one loss before another occurs (Boyd-Franklin, Drelich & Schwolsky-Fitch, 1995). The psychological effects of the death of a parent or parents on AIDS orphans remains an understudied area in the empirical literature. Research has not addressed the unique stressors that AIDS orphans face after their parents die. However, there are some reports that these children may manifest symptoms of psychological disturbances such as anxiety, social and emotional withdrawal, confusion, and

learning problems (Worden, 1996). AIDS orphans as compared to non-orphans are at a higher level of anxiety because death of their parents puts them at a state of uncertainty about the future (Collins-Jones, 1997).

This study investigated the psychological status of AIDS orphans in their residential destinations by examining anxiety, and the quality of the relationship between them and their caregivers. Anxiety and quality of relationship were singled out here for investigation because research shows that there is a link between the level of anxiety in children and the quality of their relationship with the caregivers (Burns, 1989). A warm and caring attitude of a caregiver has been shown to help a child overcome anxiety by finding alternative ways to face life, understand self, and resist viewing the self as hopeless (Harris, 1989). The orphans living in extended families, guardians' homes, and orphanages were compared in anxiety and in the quality of relationship between them and their caregivers.

Anxiety of AIDS-orphaned children. The word “anxiety” comes from the Latin word *anxius*, meaning a condition of agitation and distress. The term anxiety has been in use since the 1500s (Bourne, 1990). This term has been in use for such a long time because anxiety is an inevitable part of life in society. Auden (1947) described the current century as the “age of anxiety.” Anxiety in this century is heightened by feelings of loneliness and inability to love. He also attributed high anxiety to increased uncertainty about the future and to bureaucratic interference with the individual's efforts toward self-recognition and self-realization. Behavioral scientists are quite aware of the increase in anxiety because more of their clients are appearing with anxiety-related complaints. Therefore, a considerable volume of research and theory has developed in this century, in an effort to understand the meaning and causes of anxiety, and how to treat the effects of anxiety in individuals (Reynolds & Richmond, 1978). However, before this

concept is fully understood and its causes and effective treatments identified, there are signals that the level of anxiety is rising higher as we approach the next century.

The level of anxiety is rising in society because AIDS is creating more loneliness by dismantling families and intimacy between people. There is evidence that sexually active people who are at high risk for contracting AIDS face considerable anxiety and interpersonal tension because of the threat of the disease. The fear of contracting an incurable illness that is associated with wasting, misery and ostracism is a nightmare in itself (Stoudemire, 1994). Married couples also experience higher levels of anxiety because of fear caused by suspicion of unfaithfulness, which could result in contracting the deadly virus. Some couples have become dependent on condoms, which are now symbolic of AIDS. In marriages where the man is HIV infected and the woman is not, sexual intimacy is strained and the woman feels frustrated as her role of wife shifts to that of caregiver. Couples who are both infected with the virus engage in unsafe sexual practices, to lower their anxieties temporarily by feeling “normal” again (Mayer, 1995).

Persons at low risk of contracting this disease also develop anxiety because of their psychological reactions to the effects of this scourge. For example, post-menopausal grandmothers and grandfathers in areas severely affected by AIDS like Kisumu experience heightened anxiety because they have lost or will lose their loved children to AIDS. In such areas, children are the source of livelihood to their old and weak parents. Faides Zulu, a grandmother from a shanty town outside Ndola, was supported by her daughter until she and her husband both died of AIDS. Suddenly, Mrs. Zulu had lost her only source of income and gained five new dependents (Staff, 1999, August 14). Caregivers of AIDS orphans are anxious about the serostatus of these children and about the burden of meeting both the physical and psychological needs of these children.

Young children living in areas with a high prevalence of this disease are not spared of heightened anxiety in this era of AIDS. These children may have been infected by the virus through MTCT, and/or they may have lost their dear parents to AIDS—a state that forces them to move to new residential destinations where they face several anxiety provoking situations. In addition, these children are uncertain about their future, have difficulty meeting their basic needs, and are more likely to join the child labor force after dropping out of school. An eight-year-old girl, Sepho Sitali, gave a moving speech during the 11th International Conference on AIDS and Sexually Transmitted Diseases, which was held in Lusaka, Zambia, in September 1999. She said, “Think of us, the children. We also want a share of the future, as doctors, teachers, lawyers, and as parents with our own children.” She added that many of her friends were AIDS orphans (Reuters, 1999, September 12).

The AIDS orphans may be unclear or not know the behavior that caused their parents to become ill with AIDS. When discovered, it may be frightening, especially as they mature and are tempted to experience sex. For most children this behavior would be considered experimentation but for them, it elicits a fear of repeating the past. In addition, unlike other extreme causes of death, AIDS orphans live with the realization that the illness could have been transmitted to them. This fear, which they may live with forever, can even be more injurious psychologically as these children continue to hear people talk of HIV/AIDS (Mayer, 1995).

Although we agree that the level of anxiety in individuals is rising as we move into the next millennium, strong disagreements erupt when we attempt to define anxiety. There has never been and perhaps there will never be a universally accepted definition of anxiety. There are as many definitions of anxiety as there are people who have written about this concept. According to Izard (1972), anxiety cannot have a universal definition because it is not a unitary concept. Anxiety is a complex mix of emotions and their interactions with antecedents in cultural,

learning, psychological, and physiological aspects of the individual. Sullivan (1953) also noted that anxiety is a complex concept, which involves intricate and extremely complex relationships between other personality variables, biologically inherited characteristics, cultural influences, the impact of education, and the effects of different patterns of upbringing. Furthermore, Gottschalk and Gleser (1969) viewed anxiety as a multimodal concept, which is classifiable into six categories—death, separation, guilt, shame, mutilation, and nonspecific anxiety.

The complex nature of anxiety explains why those who have attempted to define it have often used terms that are more confusing than the term anxiety itself. For instance, Catell (1966), described anxiety as a second-order factor and that the first-order factor components of anxiety include ego weakness, ergic tension, guilt proneness, defective integration of self-sentiment, and protension or suspicion. Obviously these terms used by Catell are more confusing than the term anxiety itself. Archer (1982) noted that anxiety does not require a definition because it has a universal communication value. Anxiety is unquestionably something we all know, experience, and recognize in ourselves and often in others. Almost everyone is anxious at one time or another. A person cannot grow or develop unless he or she experiences the anxiety that comes with confronting difficult life challenges.

Although there is disagreement about the definition of anxiety, a recent definition of anxiety by Ellis (1998) is simple, extensive, and relevant to this study. Ellis defines anxiety as a set of uncomfortable feelings and action tendencies that make you aware that unpleasant happenings—things that go against your desires—are happening or likely to happen and warn that you should better do something about them. Anxiety, then, stems from desiring something and seeing that there is a danger of not getting it. According to Ellis, all humans are goal oriented; they desire to go on living and to be reasonably happy and free from pain. Even young

children not yet able to fend for themselves strive to live, to enjoy and to be free from pain. This description of anxiety by Ellis is relevant to my study because the AIDS orphans involved in this study experience higher levels of anxiety than other children because they encounter uncomfortable reactions in their residential destinations, they are uncertain about things that will happen to them in future, and their desire to succeed may not be realized.

Although scholars may not agree with Ellis's and other definitions of anxiety, there are some aspects of this concept that are commonly accepted. For example, facilitatory and debilitating aspects of anxiety have been identified (Stipek, 1993). A small amount of anxiety or facilitatory anxiety often improves performance. It gets people moving in the directions they need to move to succeed. For instance, facilitatory anxiety makes students study for exams. On the other hand, too much anxiety often interferes with effective performance. It debilitates or distracts people and interferes with their attention to the task at hand. Freud (1926) identified three aspects of anxiety—realistic, neurotic, and moral. Realistic anxiety is the fear of real dangers in the external world. A man who wears condom or a woman who insists on condom use before intercourse is anxious about the reality of contacting HIV. Neurotic anxiety is the fear that the instinct will get out of control and cause a person to do something for which he or she will be punished. Neurotic anxiety is not so much a fear of the instincts themselves as it is fear of the punishment that is likely to ensue from instinctual gratification. For instance, a rapist enjoys the act, but is anxious about being punished if caught. Moral anxiety is the fear of the conscience or feelings of guilt. People with well-developed superegos tend to be anxious when they do something or even think of doing something that is contrary to the moral code by which they have been raised.

The most prevalent conceptualization of anxiety today is the state-trait distinction proposed by Spielberger (1972). State anxiety is a complex of

emotional reactions that arises when the individual perceives a situation as threatening, regardless of whether a real threat exists. Thus, state anxiety is a transitory condition, associated with a specific situation, and may vary greatly in intensity and duration. State is the type of anxiety elicited by a threat of some sort or by a situation in which one believes that he or she has little or no chance of succeeding. For example, a poor quality of relationship between an orphan and a caregiver can induce state anxiety in the orphan.

Trait anxiety, on the other hand, is the tendency to be worry-prone in a wide range of situations. Individuals who feel anxious in any situation possess this type of anxiety. Such individuals are anxious a good part of the time, even when the situation is not particularly dangerous or threatening. Trait anxiety represents an individual's characteristic just like intelligence. It is a continuing and enduring characteristic of an individual. Thus, trait anxiety describes the personality of an individual who frequently experiences anxiety, often where the strength of the stimulus for evoking anxiety is relatively weak. Trait anxiety appears to vary, from infrequent in some persons to an almost constant experience of anxiety in others, and is broadly based, not specific to a brief episode or highly specific situation. For example, an orphan with this type of anxiety worried more or less at the same level before and after moving into a new residential destination.

This study concentrated on state anxiety in AIDS orphans because it is the type of anxiety that is controllable, and its sources can be determined. Stipek (1993) identified several sources of state anxiety. Four of the sources of state anxiety he identified are relevant in this study: death, new situation, judgment or evaluation by others, and the future. Death of parents raises anxiety in children because it denies them the opportunity to love and to be loved. After the death of parents, orphans are forced to move to a new residential destination where they encounter new style of life and meet new challenges that raise their anxiety levels.

The AIDS orphans may be anxious about being disliked and unaccepted by the caregiver and by his or her family members. Finally, these orphans are anxious about how well they will make it in life after their parents die of AIDS.

Anxiety is a pervasive human experience, and it affects people physiologically, behaviorally and psychologically. At the physiological level, anxiety may include bodily reactions such as rapid heartbeat, muscle tension, queasiness, dry mouth, or sweating. At the behavioral level, it may sabotage one's ability to act, express him/herself, or deal with certain everyday situations. Psychologically, anxiety is a subjective state of apprehension and uneasiness. Because of these effects of anxiety on people, there has been considerable effort to measure its occurrence and intensity. Krause (1961) reports from an extensive review of the literature in psychology and psychiatry, that anxiety is usually inferred from self-reports, physiological signs, behavior, task performance, and response to stress. He also reported that self-report is used most frequently in describing anxiety that an individual experiences. Self-reports are primarily used to determine the subjectively experienced effects associated with anxiety provoking situations in children (Ollendick, 1995).

Kendall and Brady (1995) reported that there are three commonly used self-report scales in measuring anxiety in children. These scales are: Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond 1978), State-Trait Anxiety Inventory of Children (STAIC; Spielberger, 1973), and Children's Depression Inventory (CDI; Kovac, 1980/1981). Out of these three scales, RCMAS was used in this study because it is the most frequently used self-report and perhaps the best scale available for the measurement of anxiety in children (Ollendick, 1995). This scale was also used because it has been used in Africa (Pela & Reynolds, 1982) and because the four factors (Physiological Anxiety, Worry, Social Concerns, and Lie) underlying it were all relevant in this study.

STAIC was not used in this study because one of its two underlying factors (trait anxiety) did not correspond well to the objectives of this study. This study did not investigate trait anxiety in the AIDS-orphaned children because this type of anxiety is unlikely to be affected by residential destination. There is no evidence that children living in different residential destinations differ in this type of anxiety. Furthermore, there is no report in the literature that orphans and non-orphans differ in trait anxiety. CDI was not used because it was designed to measure depression in children. Depression was not a subject for investigation in this study.

Relationship between AIDS orphans and caregivers. AIDS

orphans are forced into new relationships with caregivers by the death of their HIV-infected parents. Typically, the entry of an orphan into a family results in a “modified” or “reconstituted” family structure—comprised of parents, siblings, and the orphan. Parents and their biological children must make adjustments to the new member of the family. Similarly, the orphan must adapt to the family members, to a new home environment, and sometimes to a new community. Caregivers, particularly guardians and orphanage care providers enter their new role as “parent” without the benefit of having already established a close relationship with the orphans. The orphans may resist or resent their caregivers’ rules and mannerisms. There is therefore a possibility that caregivers, particularly in the guardians’ homes and extended families might display some kind of biases against the orphans.

Measures of education, mental health, physical health, and nutrition have detected differences between AIDS-orphaned children and non-orphaned children living in the same family (Foster et al., 1995). Foster et al. have postulated that this difference in need satisfaction between orphans and non-orphans is a result of poverty. Caregivers may want to care as much for orphans as for their own children, but because of financial constraints, they give first preference to their own

biological children. However, there is very little research on reconstituted families and orphans. Cases of mistreatment of the orphans by caregivers have not been investigated. For instance, it is not known whether these children are treated as unpaid workers in their new residential destinations or treated with dignity.

The quality of relationship between the AIDS-orphaned children and their caregivers plays an important part in the emotional and psychological development of children. Research shows that children who had secure relationships with their care providers presumably because these care providers behaved more sensitively and supportively—were more ego resilient and more appropriately ego controlled than those who had insecure relationships with their care providers (Howes, Matheson, & Hamilton, 1994). There is also evidence that high quality non-parental care has positive effects on personality maturity, whereas children receiving care of lower quality tend to be less mature (Lamb, 1999). Research also indicates that perceived incompatibility between the child and his/her adoptive family is an important predictor of child outcomes (Grotevant, McRoy, & Jenkins, 1988).

Quality of caregiver-orphan relationship as a construct has not been widely investigated. The dearth of research data on the quality of caregiver-orphan relationship explains why I was unable to find a suitable scale to measure this construct. My empirical research on the quality of relationship between orphans and their caregivers in Kisumu district, therefore, began with the construction and validation of the Quality of Caregiver-Orphan Relationship Scale. The details of how this scale was constructed, and how its construct validity and reliability were determined are reported in Chapter III of this dissertation.

Summary of the Literature Reviewed

Most studies have concentrated on the nature of HIV, its transmission, and its effect on AIDS patients. Although one of the downstream effects of the HIV epidemic is the increase of orphans in the society, research on AIDS orphans is scanty. There are still more questions than answers about how best the AIDS orphans can be brought up. The literature is sketchy about the effectiveness of the residential destinations in meeting the educational, psychological, and physical needs of the orphans. It is not clear how well the orphans will make it through school, whether or not they are treated with respect in their residential destinations, or whether or not they are well fed. The few studies that have been conducted on AIDS orphans are general surveys, producing some qualitative and quantitative data. There is no report in the literature of any systematic study of the education, anxiety, and the quality of relationship between AIDS-orphaned children and their caregivers.

Many significant issues related to children orphaned by AIDS have not been addressed in research. It is not known whether the siblings are separated during placement or not, and the potential benefits or dangers of such separations are not documented. There are no reports in the literature about the criteria of selection used by caregivers during adoption. The problems posed by poor physical health and mental status of the child to placement have not been investigated in Africa . In other parts of the world it is known that incorrigible, physically and mentally handicapped children are generally more difficult to place in foster homes or in adoption homes or into orphanages (Cook, 1995).

In sum, there is no detailed report in the literature about how the members of the extended family in Kisumu are coping with the task of bringing up these orphans. The only report in the literature is that the extended family is failing to cope with the large number of orphans in the district. The capacity of the extended

family to absorb AIDS orphans in Kisumu is exceeded. In a district where the orphanage system is undeveloped, foster family care is unknown, and few guardians' homes exist, the condition of the orphans looks desperate. There is a need for vigorous research on the orphans so that intervention programs based on research findings can be developed to meet the needs of these children.

Overview of the Research Objectives

One of this study's major objectives was to investigate the effect of the residential destination on the education and psychological well-being of AIDS-orphaned children. This objective was achieved by comparing the school dropout rates, grade repetition rates, anxiety, and the quality of caregiver-orphan relationship among the orphans living in extended families, guardians' homes, and orphanages.

This study's second main objective was to examine the possible causes of any differences observed among the three groups of orphans in the educational and psychological variables investigated. This objective was achieved by determining the major factor caregivers considered before accepting the responsibility of caring for orphans; by finding out whether or not siblings orphaned by AIDS were separated during adoption; by finding out whether or not caregivers received support from members of the orphans' extended families and from the government; and by comparing the amount of money the three groups of caregivers spent on the upkeep of the orphans.

The third objective of this study was to examine the process of adoption of AIDS-orphaned children. This objective was achieved by determining whether or not AIDS patients made placement and custody plans for their children before dying, and by determining whether or not caregivers considered the HIV status of the orphans before adoption.

This study's final main objective was to develop QCORS, and to establish the construct validity and reliability of this scale. This objective was achieved in the preliminary research (Study 1) because QCORS was essential for data collection in the main research (Study 2). This objective was achieved by factor analyzing the responses of orphans to the items in this scale, and by determining the test-retest reliability of this scale. The achievement of this objective resulted in the reduction of the number of items in the original QCORS from 22 to 13.

Research Questions

Most child-development experts do not believe it possible or desirable to summarize the developmental status and well-being of a child or group of children with a single number, be it a health index, a percentile on a growth chart or developmental scale, or an IQ test score (Zill & Coiro, 1992). Child experts are more comfortable with a developmental profile covering several different domains (Sattler, 1982). This view has grown out of the holistic approach (Smuts, 1926) to understanding human development, an approach recognizing that an individual is an indivisible totality and that the affective, biophysical, cognitive, social, and cultural domains are interdependent and cannot be fully understood without considering the context. The view has also developed because with the advent of statistical computer programs, researchers can speedily and accurately use multivariate statistical techniques to analyze the effects of one or more independent variables on more than one dependent variable.

This study did not generate a single index as a summary of the developmental status and well-being of AIDS orphans in Kisumu district. Instead, this study used four dependent variables—school dropout, grade repetition, anxiety, and quality of caregiver-orphans relationship—to compare the orphans living in the three different residential options. It also considered the context in

which these orphans lived by examining the possible causes of the differences observed among the three groups of orphans and by reporting about the process of adoption of AIDS orphans. The following specific questions, which were derived from the first three objectives, were investigated in this study:

1. Does a difference exist in school dropout rates among AIDS-orphaned children living in extended families, guardians' homes, and orphanages?
2. Does a difference exist in grade repetition rates among AIDS-orphaned children living in extended families, guardians' homes, and orphanages?
3. Does a difference exist in anxiety among AIDS-orphaned children living in extended families, guardians' homes and orphanages?
4. Does a difference exist in the quality of caregiver-orphan relationship among AIDS-orphaned children living in extended families, guardians' homes and orphanages?
5. What is the major criterion used by caregivers in Kisumu when deciding to care for AIDS orphans?
6. Are the siblings orphaned by AIDS separated during adoption?
7. Do caregivers receive support from the orphan's extended family members and from the government?
8. Does any difference exist in the amount of money spent by caregivers on orphans living in extended families, guardians' homes, and orphanages?
9. Do AIDS patients in Kisumu district make placement and custody plans for their children before dying?
10. Do caregivers consider the HIV status of the orphans before adopting them?

CHAPTER III

METHODS AND RESULTS FOR STUDY 1

This chapter discusses the methods used and the results obtained in Study 1, which was a preliminary study undertaken before the main research (Study 2) was conducted. The sole objective for conducting this preliminary research was to determine the construct validity and reliability of QCORS. This scale is a new research instrument, and its construct validity and reliability had to be established before it was used in Study 2. This chapter opens with a description of the construction of the Quality of Caregiver Orphan Relationship Scale (QCORS). It then describes the subjects involved, and the procedure used in this study. Finally, this chapter describes in detail how the construct validity and reliability of this scale were established.

Construction of the Quality of Caregiver-Orphan Relationship Scale

My empirical research on the quality of relationship between orphans and their caregivers began with the construction and validation of the Quality of Caregiver-Orphan Relationship Scale. I was unable to find a suitable scale to measure the quality of the relationship between orphans and their caregivers. The only scale I could find that approached being suitable was the Liking Scale (Reber, 1995). The Liking Scale was developed to measure interpersonal liking and is based on two primary components assumed to reflect liking: a feeling that the liked person is similar to oneself and an overall favorable evaluation of the liked person. I decided not to use this scale because its underlying constructs do not conform to my experience of what constitutes a quality relationship between an orphan and a caregiver in Kisumu. For instance, I do not expect caregivers to like orphans because orphans are similar to them. The orphans in Kisumu are quite dissimilar to their caregivers. For instance, some of the orphans are HIV positive, while others

come from a socioeconomic status different from that of their caregivers. It was assumed in this study that good caregivers, like good parents, have an unconditional affection for their dependents.

My failure to find a suitable scale for investigating the quality of the relationship between orphans and their caregivers motivated me to develop a new Quality of Caregiver-Orphan Relationship Scale. In developing this scale, I sought to assess affection between orphans and their caregiver, and the perceptions of orphans about the food provided by their caregivers. Perceptions about food were considered here as an aspect of the quality of the relationship between orphans and their caregivers because in a district like Kisumu where food is generally in short supply, a poor relationship may lead to denial of food. Some caregivers would also be likely to give food to their biological children and deny orphans their ration. Whereas physical and verbal abuse are overt expressions of dislike, denial of food is a subtle and covert form of punishment often meted against non-biological children. Denial of food may be used by some caregivers as a hint to an orphan that his or her presence in a family is not welcome—a condition that might compel an orphan to look for an alternative caregiver within or outside the extended family system.

This scale was constructed after careful consideration of the nature of the relationship between orphans and their caretakers in Kisumu, Green's (1989) belief about children, and the United Nations (UN) Charter of Children's Rights (1990). According to Green, children pray for two things: affection and bread. "Give the child both and his eyes will light up with joy. A child that is starved of food or affection puts us to shame" (Green, 1989, p. 112). According to the UN Charter for Children's Rights, a child has a right to affection and understanding, adequate nutrition, education, medical care, special care if required, a peaceful environment,

and the opportunity to develop individual abilities. Green's belief and children's rights as stipulated in the UN Charter apply to all children including orphans.

The construction of the QCORS started with my writing of clear and unambiguous items. The items were then critically examined for clarity by my supervisor and by personnel in the department of Sociology, University of Alberta, who are skilled in item construction. Furthermore, the items were scrutinized for their ecological appropriateness by three students from Kenya. Suggestions from my supervisor, from the personnel in the department of Sociology, and from the three Kenyan students were used to improve the quality of the items in the scale. The original 22 items that I began with in the QCORS are listed in Table 1. In this table, the 13 items included in the final version of the scale are also identified.

Table 1

Quality of Caregiver-Orphan Relationship Scale (QCORS)

-
1. I often have breakfast.
 T. true F. false
 2. My caregiver loves me.
 T. true F. false
 3. **My caregiver often beats me.**
 T. true F. false
 4. **I often miss supper.**
 T. true F. false
 5. **Most of the time, my caregiver does not want to talk with me.**
 T. true F. false
 6. **I like my caregiver very much.**
 T. true F. false
 7. **I usually get enough meals.**
 T. true F. false
 8. **My caregiver often turns down my requests.**
 T. true F. false
 9. Too many people live with my caregiver.
 T. true F. false
 10. **My caregiver takes good care of me when I am sick.**
 T. true F. false
 11. **I rarely miss lunch.**
 T. true F. false
 12. **I do not usually talk to my caregiver.**
 T. true F. false
 13. **If I had the choice, I would live with someone else.**
 T. true F. false
 14. Among people I live with, food is generally shared equally.
 T. true F. false
 15. **Most times, my caregiver is concerned about my welfare.**
 T. true F. false
 16. I usually know what my caregiver expects me to do.
 T. true F. false
 17. My caretaker rarely grants me permission to visit my relatives.
 T. true F. false
 18. **I want to stay with my caregiver until I grow up.**
 T. true F. false
 19. My caregiver expects me to work to buy food.
 T. true F. false
 20. My caregiver generally ensures that domestic work is equally shared.
 T. true F. false
 21. **My caregiver often distrusts me.**
 T. true F. false
 22. I am as strong as anybody of my age.
 T. true F. false
-

Respond by circling letter **T** or **F** if the statements are **true** or **false** for you. Do not circle both letter **T** and **F** for the same sentence. The underlined **T** or **F** were scored one mark each. The **bold faced** items comprised the final version of this scale.

Before using the QCORS, the scale was administered to two groups of orphans and their responses were used to establish the construct validity and reliability of this scale.

Population and Sample

AIDS orphans are generally defined as children aged less than 15 years who have lost one or both parents (Kamali et al., 1996). However, in this study, an AIDS orphan was defined as a child aged less than 15 years who had lost both parents to AIDS. These children who have lost both parents were referred to as “total orphans” as opposed to “semi-orphans” who have lost one parent. This narrow definition of AIDS orphans was adopted for three reasons. First, in a district like Kisumu, where HIV is largely transmitted through heterosexual contact, AIDS often kills both parents leaving behind total orphans. Second, in Kisumu district most of the children living in the orphanages are total orphans. So, this narrow definition allowed for the pursuit of the research objective of comparing in education and anxiety the total orphans living in orphanages to the total orphans dwelling in extended families and guardians’ homes. Finally, this definition also allowed for the examination of the quality of relationship between AIDS orphans and their caregivers. This study did not examine the quality of relationship between semi-orphans and their surviving parents.

The study population for both this study and study 2 includes all total orphans between ages 6 and 15 years whose parents died of AIDS in Kisumu district. A study population is that aggregate of elements or subjects from which the sample is selected (Reaves, 1992). Lists of the total orphans between ages 6 and 15 years were obtained from sub-location administrative offices, the Agha Khan Rural Development offices, and six orphanages in Kisumu district. The six orphanages involved in this study were Covenant Family House, Pillar of Faith

Children's Home, Overcomers Children's Home, Kanyawegi Children's Home, Ebenezer Children's Home, and Saleem Orphanage.

The lists of total orphans in Kisumu were the sampling frame from which the subjects or elements involved in this study were actually selected. Perhaps it is important to note that these lists like other lists used in social science research were not exhaustive. Babbie (1998) noted that,

As a practical matter you are seldom in a position to guarantee that every element meeting the theoretical definitions laid down actually has a chance of being selected in the sample. Even where lists of elements exist for sampling purposes, the lists are usually somewhat incomplete. Some students are always omitted inadvertently, from students rosters. Some telephone subscribers request that their names and numbers be unlisted (p. 201).

Thus, according to Babbie, a sampling frame often does not include all study population elements. In this study, the lists of orphans used were perhaps not exhaustive because the number of AIDS orphans in the district is increasing so rapidly that it is hard for the local administrative offices to keep tract of all of them.

From the sampling frame, 565 orphans who had lost both parents between 1986 and 1995 were recruited for studies 1 and 2. The year 1986 was chosen because of reports of a marked increase in death rates among young adults in Africa starting in this year, with most of this increase being attributed to AIDS (Garenne et al., 1996). The year 1995 was chosen so that by the time this study was carried out (in 1998), all the subjects would have been orphaned for at least 3 years. By this time, the orphans would have settled in their residential destinations, and the effects of these institutions on them would be detectable.

Sample for Study 1

A total of 115 orphans were involved in this preliminary study. The subjects were randomly selected from the list of AIDS-orphaned children in Kisumu district. About one third of these subjects were drawn from each of the three residential destinations: the extended families, guardians' homes and orphanages. This sample comprised of 58 boys and 57 girls between the ages of 6 and 15 years. Out of the 115 subjects, 100 were used in the establishment of the construct validity of this scale and 15 subjects were used in establishing the reliability of this scale.

Procedure for Study 1

Permission to conduct this study in Kisumu district was obtained from the Office of the President in Nairobi, Kenya (see Appendix A). This permit authorized the researcher to have access to any documents relevant to the study, such as lists of AIDS orphans in the sub-location administrative offices, and to administer research instruments to the subjects. All subjects were informed about the objectives of the study and their informed consent to participate in the study was sought. All orphans involved in this study were children, and the consent of their caregivers was sought before the orphans were asked to participate in the study. In addition, all participants read and signed the informed consent letter (see Appendix B) before completing the scale. Finally, all subjects were informed that they were free to withdraw from the study at any time.

The original 22-item QCORS was administered to 100 subjects (50 boys and 50 fifty girls). This instrument was administered to the subjects by the researcher and his two research assistants. The subjects were instructed to respond to all items in the scale and to answer the questions as they felt about the relationship between them and their caregivers and about food provided by their

caregivers. It took the participants about 30 minutes to complete the scale. Their responses to the items in the scale were coded and entered into a computer file. The SPSS program was used in running the correlation and factor analytic procedures. The intercorrelations among the responses to the 22 items in the scale were tested using Barlett's test of Sphericity. The results of this analysis showed that the items were significantly correlated and therefore could be factor analyzed. Factor analysis was then conducted to establish the construct validity of this scale.

Based on the results of factor analysis, the 22 items in the original QCORS were reduced to 13. As part of this preliminary study, the 13-item QCORS was administered to 15 subjects by the researcher and readministered to them after 10 days. This step was undertaken in order to establish test-retest reliability of QCORS before it was used in the main study. The details of how factor analytic procedures were used to arrive at the 13-item QCORS, and how the reliability of this scale was determined are reported next.

Determination of Construct Validity of QCORS

One of this study's main objectives was to establish the construct validity of QCORS and to report its reliability before it was used in data collection. This step was important because researcher-made scales tend to have poorer construct validity and lower reliability coefficients because they have not been thoroughly tested and proven consistent. Furthermore, studies have shown that inventories like this scale, which measure the affective domain, tend to have a lower reliability than tests measuring the cognitive domain. This difference exists because affective domain behavior is less consistent than cognitive domain behavior (Ravid, 1994). Therefore, this scale's construct validity and reliability had to be determined before it was used in the second study.

Methods of obtaining construct-related validity evidence include factor analysis, correlations, group differences, and change after time or intervention (Stevens, 1996). In this study, factor analysis was the primary method used to examine the construct validity of QCORS and to improve its validity by eliminating complex items in the scale. Factor analysis (FA) was chosen because it is the best construct validity assessment procedure available. According to Cronbach (1984), FA is a valuable technique in the assessment of the construct validity of test-score interpretations. Kerlinger (1979) described FA as the queen of the analytic methods used in the assessment of construct validity because of its power and elegance. An overview of factor analytic techniques are provided here because factor analysis as a statistical procedure is abstract and an investigator has to make several choices in order to use this procedure effectively.

Overview of Factor Analysis

In this section, factor analysis is briefly described, the different methods involved in the analysis are indicated, and the reasons for using a particular method in this study are stated. This section is followed by a detailed report of the factor analysis of the data collected in this first study.

Factor analysis is applied to a group of variables in which none has been specified as a dependent or independent variable. This technique differs from the other multivariate procedures in that it reveals the relationship between observed and hypothetical variables, while the other multivariate techniques are concerned primarily with the relationships among observed variables. The hypothetical variables are called “factors.” A factor is a construct that is assumed to underlie items, scales, and measures of any kind. Operationally, factor analysis involves using a set of mutually correlated observed variables to explain variance in a derived set of mutually uncorrelated hypothetical factors (Kachigan, 1991).

The specific goals of factor analysis are to summarize patterns of intercorrelations among variables, to reduce a large number of observed variables to a smaller number of hypothetical variables, to provide an operational definition for an unobserved, hypothetical construct by using observed variables, or to test a theory about the nature of underlying variables (Tabachnick & Fidell, 1983). The factor analytic steps involved to achieve these goals include determining the correlation among the observed variables, extracting a set of factors from the correlation matrix, determining the number of factors to be considered, rotating the factors to increase interpretability, weighting the factor loadings, and finally naming the factors. The statistical techniques relevant to these steps discussed here include exploratory and confirmatory factor analysis, principal component analysis and common factor analysis, factor retention criteria, rotation methods, and factor loadings. Also mentioned is a nonstatistical procedure of naming factors underlying the observed variables.

Exploratory and confirmatory factor analysis. Exploratory factor analysis and confirmatory factor analysis are the two broad functional categories of factor analysis. In other words, the uses of FA are mainly exploratory or confirmatory, depending on the researcher's major objectives. Although in practice, studies may contain aspects of both exploratory and confirmatory analysis, the two techniques can be usefully distinguished from each other in terms of the situations in which they are commonly used. Exploratory factor analysis (EFA) is primarily used to identify the factor structure of a set of observed variables. Doing so involves determining the number of factors and the pattern of the factor loadings. Under EFA variables cannot be forced to load only on certain factors. The variables are free to load on all factors (Bandalos, 1996). Using EFA, one seeks to summarize data by grouping together the original intercorrelated variables. The

variables may or may not have been chosen with an underlying factor structure in mind. This method is concerned not only with the problem of determining the number of factors underlying observed variables, but also with the problem of rotation, which may facilitate the interpretation of factors. EFA is generally considered to be more of a theory-generating than a theory-testing procedure (Maxwell, 1977).

Confirmatory factor analysis (CFA) is generally based on a strong theoretical and/or empirical foundation that allows the researcher to specify an exact factor structure in advance. The researcher specifies which variables will load on which factors, as well as such things as which factors are correlated. In other words, factors are fixed a priori as well as whether they are correlated or uncorrelated. In this analysis, the variables are forced to load on a specific factor or factors. CFA is more of a theory-testing procedure than EFA. This technique is used to verify theoretical or empirically derived constructs (Stevens, 1996). In CFA, a path model is commonly used to show the relationship among observed variables and the factors they were designed to measure. A common form of notation used in a CFA path model was popularized by the LISREL (Linear Structural Relationships) computer program (Joreskog & Sorbom, 1993).

EFA was used in this study because the major objective of carrying out factor analysis was to establish the construct validity of QCORS. Doing so entailed allowing all items in this scale the freedom to load on any factor, and also involved the elimination of complex items from the scale, determination of the number of factors underlying this scale, and whether these factors were correlated or uncorrelated. Thus, EFA was used as a tool to consolidate the items in the scale, to generate a theory about this scale's factor structure, and to formulate an abbreviated scale. After deciding that EFA was the most appropriate procedure to apply in this

study, the most immediate choice I had to make involved which method to employ in extracting hypothetical factors from the observed variables.

Principal component analysis and common factor analysis.

Principal component analysis (PCA) and common factor analysis (FA) are the two commonly used extraction procedures in factor analysis. Their main difference lies in what type of variance is analyzed. PCA is designed to account for all the variance in the observed variables, including shared variance lying in the overlap between variables, unique variance, and error variance (Tabachnick & Fidell, 1983). According to Muliak (1972), PCA is not truly factor analysis, although it falls under the general rubric of factor analysis. It is the linear combining of the original variables into a new set of derived variables, involving simultaneous equations and the roots obtained from the solutions, called eigenvalues. The derived variables or components account for most of the total variance (Stevens, 1996).

Common factor analysis is usually called factor analysis. It differs from principal component analysis in that only the variance a variable shares with other variables is considered relevant to the solution. The error variance and the variance unique to each variable are disregarded, explaining why in factor analysis, numbers less than one, called communalities, are in the main diagonal of the correlation matrix, whereas in PCA, ones are in the diagonal of the correlation matrix. Common factor analysis also differs from PCA in that the hypothetical factors derived are estimated from the original variables, whereas in component analysis, since the components are specific linear combinations, no estimation is involved (Stevens, 1996). Thus, in factor analysis, common factors are not expressible by the combination of the observed variables. Factor analysis involves estimation of factors through a mathematical model (Kim & Mueller, 1978b).

Despite these differences, both PCA and FA are generally employed for the same purposes. Both methods are effective and widely used means of exploring the interdependence among the variables. Velicer (1977) has shown that the two approaches result in essentially equivalent solutions. Velicer, Peacock, and Jackson (1982) suggested that the results of various factor procedures generally are indistinguishable, provided the correct number of components and factors are extracted. Cliff (1987) notes that “the choice of common factors or components often makes virtually no difference to the conclusion of a study” (p. 349). Gorsuch (1983) reports that when the number of variables is moderately large (for example, >30), and the analysis contains virtually no variables expected to have low communalities (e.g., .40), then practically any of the factor procedures will lead to the same interpretation. Differences can occur when the number of variables is fairly small (<20) and when some communalities are low. In this study, 22 items were involved in the analysis, and no evidence suggests that any of the items in QCORS have a very low communality. Therefore, both methods could likely result in the same factor solution.

Although these two methods of analysis produce similar factor solutions, one has to choose between PCA and FA. The choice between PCA and FA depends on the researcher’s assessment of the fit among the common factor model, the data set, and the goals of the research. If a researcher is interested in an inferred, hypothetical solution uncontaminated by unique and error variability, FA should be the choice. If, on the other hand, the researcher desires an empirical summary of the data set, PCA is the better choice (Feed, Ryan & Hess, 1991). I used FA in my analysis because I was interested in determining the hypothetical factor solution of QCORS uncontaminated by unique and error variability. According to Feed et al. (1991), unique and error variability confuse the structural picture emerging from an analysis of underlying processes. Furthermore, I chose

FA because my goal of retaining a few unambiguous items in this scale to measure the quality of the relationship between orphans and their caregivers is best met by FA. After choosing FA, the other decision I had to make was which factor-retention criterion to use in my analysis. This decision is important because the FA procedure extracts all factors underlying the observed variables. Some of these factors extracted are large, while others are very small. Factor-retention criteria help a researcher to decide which factors are large enough to be retained in the factor solution of a research instrument. The small factors, which account for very small proportions of the total variance, are disregarded.

Factor retention criteria. Four methods can be used in deciding how many factors to retain: Kaiser's criterion, the scree test, Lawley's test, and the desired total variance criterion. According to Kaiser (1960), one should retain only those factors whose eigenvalues are greater than 1. This criterion is the most widely used and is more accurate when the number of variables or items is small (10 to 15) or moderate (20 to 30). The scree test is a graphical method of factor retention proposed by Cattell (1966). In this method, the magnitude of the eigenvalues (vertical axis) is plotted against their ordinal numbers (whether a number was the first eigenvalue, the second etc.). Generally, the magnitude of successive eigenvalues drops off sharply and then tends to level off. Cattell recommends that a researcher should retain all eigenvalues in the sharp descent before the first one on the line where they start to level off. The Lawley test is a statistical test used to retain factors (Lawley, 1940). This test is rarely used because like all statistical tests, it is sensitive to sample size, and large sample size may lead to the retention of too many factors. Finally, the desired total variance criterion is used when a researcher specifies a priori the variance he or she wants the factors to account for. This method is rarely used because it could lead to the retention of

factors that are essentially variable specific, that is, load highly on only a single variable (Stevens, 1996).

An extensive study on the number-of-factors problem by Hakstian, Rogers, and Cattell (1982) reported that when the sample size is greater than 250, both Kaiser's criterion and the scree rule will yield an accurate number of factors. However, when the sample size is less than 250, Kaiser's rule is more accurate than the scree test in estimating the number of factors underlying the observed variables. In my analysis, Kaiser's factor retention criterion was used because it is the most widely used method of factor retention, and because the sample size of 100 subjects was less than 250. After deciding to use Kaiser's criterion to retain factors, I had to decide which factor rotation method to use to improve the interpretability of extracted and retained factors.

Factor rotation methods. Rotation may be conceptualized as a geometric technique of moving the axes in the factor space so that they "shoot through" the observed variable clusters more closely (Tabachnick & Fidell, 1983). The factors extracted during the initial factoring step are artificial variables and are not necessarily interpretable. Usually a factor is most interpretable when a few variables load highly on it and the rest do not. The effect of rotation is to make factors more interpretable by amplifying high loadings while minimizing low ones. Rotation makes extracted factors simpler and improves the scientific utility of the factor solution. This procedure keeps the number of factors and communalities of each variable fixed. The results of factor extraction, unaccompanied by rotation, are likely to be uninterpretable regardless of which extraction technique is used. Rotation of factors involves two options, the *orthogonal* (or rigid) and the *oblique*, and subsumed under these two types are a number of possible variants (Kim & Mueller, 1978b).

The orthogonal procedures are rigid in the sense that the orthogonality (unrelatedness) of the factors is maintained for the rotated factors. This is simply because the axes involved in the rotation are maintained at right angles, and when the Cartesian coordinates are plotted, the angle between the two factors is 90 degrees. The orthogonal rotation thus results in factors that are uncorrelated or independent of each other. The results of this rotation are displayed in a loading matrix, which can be simply described as the correlation matrix between observed variables and factors. The sizes of the loading reflect the amount of variance each factor contributes to an observed variable. The results are interpreted by looking at the correlations in the loading matrix for each factor.

Three types of orthogonal rotation exist: varimax, quartimax, and equimax. Varimax, which is the most commonly used, is probably the best of the available orthogonal rotations (Gorsuch, 1983). The technique was developed by Kaiser (1960) to clean up the factors and make them easier to interpret. That is, with this rotation, each factor tends to load high on a smaller number of variables and low on the other variables. When the varimax rotation is used, the maximum variance property of the original factors is destroyed. The first rotated factor will no longer necessarily account for the maximum amount of variance. The amount of variance accounted for by each rotated factor is recalculated and the loadings reallocated. The procedure tends to minimize the complexity of the variables and to maximize factor loadings across columns or within factors. In this way, loadings tend to become higher for the variables with high correlations with a factor and smaller for the other variables. In this study, varimax rotation was used because it is the most commonly used type of orthogonal rotation, and because it is available in the SPSS program used in the data analysis.

Oblique rotation is based on the belief that the underlying factors behind the observed variables are correlated. Oblique rotation is more general than an

orthogonal rotation in that it does not arbitrarily impose the restriction that factors be uncorrelated. Its advantage over orthogonal rotation is that after making oblique rotations, if the resulting factors are orthogonal, one can be sure that orthogonality is not an artifact of the method of rotation (Kim & Mueller, 1978a). Many have argued that correlated factors are much more reasonable to assume in most cases, and therefore oblique rotations are quite reasonable (Cliff, 1987; Pedhazur & Schmelkin, 1991). Some scholars believe that if computers had been invented before factor analysis, oblique rotation would have been the preferred method of rotation. Orthogonal rotation is preferred because it offers ease of description and interpretation of results, and because it is easier to do calculations by hand and arrive at factor solutions when orthogonality between variables involved in the analysis is assumed (T. O. Maguire, personal communication, March 12, 1996). Orthogonal rotation strains reality unless the researcher is convinced that the underlying factors are actually operating almost independently of one another. In real life, most of the variables influencing human behavior are related and not orthogonal. Numerous oblique rotations have been proposed, for example, oblimin, promax, orthoblique, oblimax, quartimin, maxplane. Oblimin is available on SPSS, while Promax and orthoblique are available on the Statistics Analysis System (SAS).

Although a fundamental decision is usually required to rotate orthogonally or obliquely, a growing body of research shows that this decision may not be necessary because all rotations are equally good statistically, and the choice among different rotations is based on nonstatistical grounds. If two rotations give rise to different interpretations, those two interpretations must not be regarded as conflicting. Rather, they are two different ways of looking at the same thing, two different points of view in the common factor space (SAS User's Guide, vol. 1, 1990).

According to Pedhazur and Schmelkin (1991), the preferred course of action is to rotate both orthogonally and obliquely and carefully examine the correlation matrix resulting from oblique rotation. When, on the basis of the oblique rotation, the researcher concludes that the correlations among the factors are negligible, the interpretation of the simpler orthogonal solution becomes tenable. For instance, Stevens (1996) conducted FA using both orthogonal and oblique rotations on data collected by Golding and Seidman (1974) on the Personality Research Form (PRF), using 231 undergraduates. He found from oblique rotation that the correlations among the factors were very small, suggesting that the orthogonal solution was quite reasonable. Had he found from oblique rotation that the correlations among the factors were high, he would have adopted the oblique solution. In this study, both orthogonal and oblique factor rotations were performed, and correlation and factor matrixes obtained from these two analyses were critically examined. After deciding to rotate the factors both orthogonally and obliquely, another important decision made in this study involved the size of factor loadings that would be accepted as high and statistically significant.

Factor loadings. A factor loading is the correlation between the observed variable and the underlying factor (Stevens, 1996). Certainly, any loading to be used to interpret a factor should be statistically significant at a minimum. The standard error of the correlation coefficient is often used to determine which loadings are significant. However, studies have shown that the use of the formula for standard error of correlation to determine significant factor loadings can seriously underestimate the actual error in the factor loadings. Cliff and Hamburger (1967) reported that the standard errors of factor loadings for orthogonally rotated solutions in all cases were considerably greater (150 to 200 per cent in most cases) than the standard error of an ordinary correlation. Thus, a

rough check as to whether a loading is statistically significant can be obtained by doubling the standard error, that is, doubling the critical value required for significance for an ordinary correlation. This kind of statistical check is most crucial when sample size is small or small relative to the number of variables being factor analyzed. When the sample size is quite large (for example, $N = 1,000$), or large relative to the number of variables (for example, $N = 500$ for 20 variables), then significance is ensured. Doubling the standard error is generally appropriate when the sample size is moderate—about 100 subjects (Stevens, 1996).

Given Cliff and Humberger's (1967) results, some researchers feel that investigators should stop blindly using the rule of interpreting loadings greater than .30 as significant without taking the sample size into account. For instance, Stevens believes that sample size must be taken into account and that alpha be set stringently at .01. According to Comrey (1973) a sample size of 100 - 200 is good enough for most purposes, particularly when the number of variables is not too large. A large sample size is desirable because factor loadings are based on correlation coefficients, which tend to be less reliable when estimated from small samples. Therefore, the sample size must be large enough that correlations are reliably estimated. The alpha level should be set at .01 because in checking to determine which loadings are significant, many statistical tests will be done, and the alpha level should be set more stringently for each test. In this study, the sample size was 100, the number of items factored was 22, and the alpha level was set at .01. The critical values for factor loadings in this study was set at .51 (obtained by doubling the critical value of the ordinary correlation coefficient of .256 for 100 subjects). Thus, only factor loadings greater than .51 were considered as being significantly high. The critical values for the correlation coefficient at .01 alpha level for a two-tailed test for sample sizes ranging from 50 to 1,000 from Stevens (1996) can be seen in Appendix C.

Factor Analysis of This Study's Data

Factor analysis was performed primarily to determine the construct validity of QCORS. The SPSS computer program was used in the analysis. The analysis was based on the general rule of FA as applied to construct validity. The general rule in FA is to get the best factor solution with the fewest items or variables possible (Gorsuch, 1983). This study sought to obtain the best factor solution of QCORS and to retain the fewest items possible in the final form of this scale. To achieve this objective, responses of 100 orphans to the 22 true-false items in the original QCORS were factor analyzed. However, before these responses were factored their descriptive statistics were examined. These statistics showed that there were high, moderate, and low frequencies in the data. The relative frequencies of the responses to the items in the scale are reported in Table 2.

Table 2

Relative Frequencies of Responses to QCORS Items

Item	Responses	
	True	False
1. I often have breakfast.	.78	.22
2. My caregiver loves me.	.98	.02
3. My caregiver often beats me.	.16	.84
4. I often miss supper.	.37	.63
5. Most of the time, my caregiver does not want to talk with me.	.09	.91
6. I like my caregiver very much.	.95	.05
7. I usually get enough meals.	.51	.49
8. My caregiver often turns down my requests.	.15	.85
9. Too many people live with my caregiver.	.78	.22
10. My caregiver takes good care of me when I am sick.	.96	.04
11. I rarely miss lunch.	.60	.40
12. I do not usually talk to my caregiver.	.04	.96
13. If I had the choice, I would live with someone else.	.06	.94
14. Among people I live with, food is generally shared equally.	.94	.06
15. Most times, my caregiver is concerned about my welfare.	.94	.06
16. I usually know what my caregiver expects me to do.	.54	.46
17. My caretaker rarely grants me permission to visit my relatives.	.34	.66
18. I want to stay with my caregiver until I grow up.	.97	.03
19. My caregiver expects me to work to buy food.	.06	.94
20. My caregiver generally ensures that domestic work is equally shared.	.82	.18
21. My caregiver often distrusts me.	.04	.96
22. I am as strong as anybody of my age.	.94	.06

After examining the relative frequencies of the responses, the general steps and procedures in factor analysis were applied to the data. The first general step of factor analysis normally involves an examination of the interrelationships among the observed variables. This step was applied to the data in this study by scrutinizing the original correlation matrix of the items in the QCORS. This matrix is displayed in Table 3.

Table 3

Original Correlation Matrix of Items in the QCORS

Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.0														
2	-.08	1.0													
3	.17	.06	1.0												
4	.06	.11	.29	1.0											
5	-.17	.05	.15	.05	1.0										
6	.21	-.03	.10	-.11	-.73	1.0									
7	.20	-.14	-.17	-.33	-.04	.14	1.0								
8	-.25	.06	-.03	.08	.36	-.42	-.37	1.0							
9	.18	-.08	-.03	-.09	-.34	.32	.16	-.11	1.0						
10	.38	-.03	.09	-.16	-.47	.66	.21	-.34	.26	1.0					
11	.40	-.12	-.03	-.26	-.10	.09	.55	-.17	.31	.25	1.0				
12	.11	.03	.47	-.05	-.06	.05	.10	-.08	.11	.04	.06	1.0			
13	-.21	.02	.04	.26	.53	-.53	-.17	.39	-.11	-.60	-.12	-.03	1.0		
14	.37	-.04	.11	-.16	-.36	.52	.17	-.25	.27	.59	.31	.05	-.66	1.0	
15	.48	-.04	.11	-.33	-.36	.52	.26	-.48	.17	.59	.31	.05	-.48	.47	1.0
16	.28	.15	.18	.46	.08	-.12	-.22	.28	-.10	-.09	-.06	.19	.15	-.06	-.23
17	-.23	-.05	.10	.02	.36	-.22	-.06	.35	-.07	-.18	-.02	-.15	.23	-.17	-.35
18	.33	-.03	.08	-.23	-.56	.77	.18	-.42	.33	.86	.22	.04	-.67	.70	.70
19	-.17	.04	.01	.16	.66	-.52	-.01	.25	-.48	-.59	-.14	-.05	.48	-.47	-.47
20	.32	.12	.20	.04	-.03	.13	.01	-.09	.07	.17	.15	.10	-.25	.43	.43
21	-.01	.03	.33	-.16	-.06	.05	.10	-.09	.11	.04	.06	.74	-.03	.05	.05
22	.27	-.04	-.01	-.16	-.66	.52	.10	-.25	.37	.59	.22	.05	-.48	.65	.47

Table 3 Contd.

Items	16	17	18	19	20	21	22
16	1.0						
17	-.10	1.0					
18	-.16	-.25	1.0				
19	.15	.35	-.70	1.0			
20	.04	-.54	.22	-.21	1.0		
21	.09	-.04	.04	-.05	-.04	1.0	
22	-.06	-.35	.70	-.82	.21	.05	1.0

An examination of this matrix revealed low, moderate, and high correlations among the 22 items in QCORS. This finding led to the next procedure in this step of factor analysis, which involves testing whether or not the observed correlations among the items were statistically significant. Barlett’s Test of Sphericity (Cooley & Lohnes, 1971) was used to perform this function.

Barlett’s Test of Sphericity tests the null hypothesis that the variables in the population correlation matrix are uncorrelated. This test provides information about the correlations among the observed variables by testing the hypothesis that the correlation is an identity matrix, that is, all the diagonal terms are 1, and all off-diagonal terms are 0. The test is based on the determinant of the error correlation matrix. A determinant close in value to 0 indicates that one or more of the variables can almost be expressed as a linear function of the other variables. Thus, the hypothesis that the variables are independent or uncorrelated is rejected if the determinant is small. If one fails to reject with this test, then one has no reason to

do factor analysis since the variables are already uncorrelated (Stevens, 1996). The value reported in Barlett's Test of Sphericity is a transformation of the determinant, which has a chi-square distribution. In this study, Barlett's Test of Sphericity showed that items in the QCORS were significantly correlated, $\chi^2 (231, N=100) = 1330.62, p < .0001$, therefore the items in the scale could be factored.

In the second step of the analysis, factor analytic procedures were used to address whether the observed correlations could be explained by the existence of a smaller number of hypothetical variables. These procedures identify highly correlated items and load them on the same factor. EFA was the broad functional procedure of FA employed in this study. EFA was used because QCORS was constructed without prior knowledge of the number of factors underlying it, creating a need to examine the factor structure of QCORS and to enhance its construct validity by eliminating complex items from the scale. To achieve this objective, common factor analysis was performed to extract hypothetical factors from the observed variables; Kaiser's criterion was used to retain few but large factors; orthogonal rotation was performed to make factors more interpretable; and only factor loadings greater than .51 were considered high and significant. The purpose for running these analyses was to eliminate complex items from QCORS and to retain pure items in the QCORS.

Results of factor analysis. A common factor analysis was run. The initial statistics that emerged from this analysis contain all factors, eigenvalues, percentage of variance accounted for by each factor, and the cumulative percentage. The initial statistics are presented in Table 4.

Table 4
Initial Statistics from Common Factor Analysis

Factor	Eigenvalue	% of Variance	Cumulative %
1	6.80	30.9	30.9
2	2.28	10.4	41.3
3	1.98	9.0	50.3
4	1.66	7.6	57.9
5	1.34	6.1	64.0
6	1.22	5.5	69.5
7	1.08	4.9	74.4
8	.93	4.2	78.7
9	.84	3.8	82.5
10	.66	3.0	85.5
11	.52	2.4	87.9
12	.47	2.1	90.0
13	.44	2.0	92.0
14	.33	1.5	93.5
15	.30	1.4	94.9
16	.29	1.3	96.2
17	.25	1.2	97.4
18	.19	.9	98.2
19	.16	.7	98.9
20	.11	.5	99.5
21	.07	.3	99.8
22	.05	.2	100.0

A total of 22 factors accounting for 100 per cent of the variance emerged. Out of these 22 factors, seven factors had eigenvalues greater than one and were retained for further analysis. Kaiser’s eigenvalues-greater-than-one criterion was applied to retain the seven factors, which accounted for 74.4 per cent of the total variance. From these initial statistics, it was concluded that the original QCORS is a seven-factor scale. The seven-factor structure was unacceptable because these were too many factors to be measured by one scale.

In the next step of the analysis, the seven factors were rotated. The orthogonal factor rotation method was used. The rotation process was necessary

because factors extracted during initial factoring step are not necessarily interpretable. Rotation involves realigning the factors extracted in relation to the observed variables. The effect of rotation is to change the loading of each observed variable on the factor. This process makes factors more interpretable because it amplifies high loadings and minimizes low ones. A factor is most interpretable when a few variables load highly on it and the rest do not. The rotated factor loadings of the 22 items in the scale on the seven factors are presented in Table 5.

Table 5

Orthogonal Rotated Factor Solution of Full QCORS

Items	Factors						
	1	2	3	4	5	6	7
18	.92	.10	.02	.17	-.08	.05	-.07
10	.85	.17	.02	.10	.01	-.01	-.03
6	.78	-.02	.05	.20	.03	-.12	-.28
13	-.76	-.01	.02	-.02	.16	-.11	.17
14	.75	.22	.02	.11	-.02	.26	.18
15	.66	.30	.04	-.06	-.18	.34	-.22
22	.66	.04	.01	.56	-.01	.16	-.02
19	-.63	.07	-.02	-.62	.08	-.14	.05
5	-.56	.12	.01	-.46	-.05	.09	.42
11	.12	.83	.03	.17	-.08	.06	.11
7	.06	.73	.06	-.03	-.30	-.10	-.28
1	.34	.60	.01	-.02	.46	.25	-.07
12	-.02	.06	.92	.08	.07	.09	-.08
21	-.02	.02	.90	.11	-.11	-.04	-.05
3	.23	-.06	.60	-.35	.37	.07	.22
9	.21	.29	.11	.68	-.00	-.08	.12
4	-.12	-.24	-.08	-.10	.81	-.06	-.06
16	-.17	.00	.13	.08	.78	.12	.10
20	.22	.12	.02	-.05	.07	.87	.01
8	-.40	-.23	-.08	.13	.09	.73	.02
17	-.10	.02	-.02	-.30	-.07	-.67	.58
2	-.01	-.31	.07	-.07	.04	.13	.50

The loadings of each of the 22 items on the seven factors that emerged were critically examined. During this examination, only factor loadings greater than .51 were considered high and significant. The purpose of this examination was twofold: to identify and retain pure items for further analysis, and to eliminate complex items from the scale. Pure items are also called “marker items.” These items are highly correlated with one another and they only load on one factor

regardless of the extraction or rotational technique used in factor analysis. A complex item loads high on more than one factor or loads low on all factors. Elimination of complex items is part of generating hypotheses about factors and selecting variables to measure them. The elimination process is complete when all complex items are removed and all pure items are selected and retained in the scale (Friedenberg, 1995).

Five complex items (2, 9, 17, 19 and 22) were eliminated from the scale. Item 2 was eliminated because it loaded low on all factors. Item 9 was also removed because it was the only item that loaded high on Factor 4. Item 17 was removed because it loaded high on both Factor 6 and Factor 7, while Items 19 and 22 were eliminated because they loaded high on both Factor 1 and Factor 4. After eliminating these five complex items from the scale, a second factor analysis was run for the remaining seventeen items. From this analysis, five factors were extracted, and the loadings are presented in Table 6.

Table 6

Orthogonal Rotated Factor Solution of QCORS (17 Items)

Items	Factors				
	1	2	3	4	5
18	.89	.01	.10	-.10	.24
6	.89	.05	-.01	.00	-.01
5	-.81	.00	.01	-.07	.25
10	.80	.01	.17	.01	.20
13	-.76	.02	-.03	.16	-.20
14	.63	.01	.15	-.03	.58
15	.60	.04	.30	-.21	.47
8	-.52	-.09	-.31	.15	.04
12	.03	.92	.09	.07	.02
21	.05	.90	.07	-.09	-.11
3	.00	.60	-.18	.28	.42
11	.09	.01	.83	-.03	.15
7	.11	.05	.80	-.27	-.11
1	.28	.00	.55	.46	.39
16	-.13	.14	.02	.84	-.00
4	-.11	-.06	-.29	.77	-.01
20	.11	.01	.04	.02	.84

The factor loadings in the five-factor structure that emerged were examined. Two complex items (14 and 20) were eliminated from the analysis. Item 14 was eliminated because it loaded high on two factors: Factor 1 and Factor 5. Item 20 was removed because it was the only item that loaded high on Factor 5. A third factor analysis was run for the remaining fifteen items and their loadings scrutinized. From this analysis, four factors emerged. The loadings on these factors are presented in Table 7.

Table 7

Orthogonal Rotated Factor Solution of QCORS (15 Items)

Item No.	Factors			
	1	2	3	4
18	.91	.15	.02	-.03
6	.87	-.04	.05	-.01
10	.82	.22	.01	.06
13	-.77	-.05	.00	.13
5	-.76	.11	.01	.04
15	.69	.41	.05	-.08
8	-.52	-.28	-.09	.18
11	.08	.84	.01	-.05
7	.08	.74	.05	-.35
1	.32	.63	.00	.52
12	.02	.07	.92	.05
21	.02	.03	.89	-.13
3	.07	-.05	.61	.44
16	-.16	.00	.13	.79
4	-.13	-.29	-.08	.74

The factor loadings of the four-factor structure that emerged were examined. Item 1 was found to be complex—loaded high on both Factor 2 and Factor 4. This item was removed, and the remaining pool of fourteen items were factored. Four factors emerged once again, and the loadings are presented in Table 8.

Table 8

Orthogonal Rotated Factor Solution of QCORS (14 Items)

Items	Factors			
	1	2	3	4
18	.92	.02	.12	-.05
6	.87	.04	-.03	.01
10	.83	.02	.19	.05
13	-.77	.00	-.03	.15
5	-.75	.02	.11	.04
15	.70	.07	.30	-.18
8	-.53	-.08	-.27	.17
12	.03	.92	.06	.05
21	.01	.89	.03	-.13
3	.08	.61	-.06	.44
11	.12	.01	.87	.01
7	.11	.03	.82	-.26
4	-.12	-.09	.81	-.24
16	-.14	.14	-.01	.79

The four-factor structure that reemerged was examined. Item 16 was eliminated because it was the only item that loaded high on factor 4. A final factor analysis was run and three distinct factors emerged from the analysis. The loadings on these three factors are presented in Table 9.

Table 9
Orthogonal Rotated Factor Solution of QCORS (13 Items)

Items	Factors		
	1	2	3
18	.92	.02	.13
6	.87	.05	-.03
10	.83	.04	.14
13	-.77	.03	-.12
5	-.75	.04	.05
15	.70	.07	.34
8	-.53	-.09	-.29
12	.01	.91	.10
21	.00	.85	.17
3	.08	.71	-.31
7	.11	.02	.83
11	.12	.04	.73
4	-.12	.05	-.66

In this three-factor solution, seven items (5, 6, 8, 10, 13, 15, and 18) loaded significantly high on Factor I; three items (3, 12, and 21) loaded significantly high on Factor II; and three items (4, 7, and 11) loaded significantly high on Factor III. A critical examination of the item content of the various factorial clusters showed this three-factor solution to be the clearest and most readily interpretable. The four-, five-, and seven-factor solutions that emerged during FA conducted in this study contained one or more singlet or couplet factors, making them difficult to define clearly and even more difficult to interpret.

The three-factor solution that emerged from orthogonal factor rotation was tested further by running an oblique factor rotation before the solution was accepted as the best factor solution of this scale. The 13 items were factored using the oblimin oblique factor rotation method. The oblique rotation was conducted to

compare oblique and orthogonal factor patterns and to examine the oblique rotation factor correlation matrix. This comparison was carried out because of reports that both orthogonal and oblique rotations produce the same factor pattern, and that when on the basis of the oblique rotation, it is concluded that the correlations among the factors are negligible, the interpretation of the simpler orthogonal solution becomes tenable (Pedhazur & Schmelkin, 1991). The factor structure emerging from the oblimin oblique rotation is presented in Table 10.

Table 10

Oblique Factor Structure Solution of QCORS (13 Items)

Items	Factors		
	1	2	3
18	.93	.07	.24
6	.86	.08	.08
10	.84	.08	.24
13	-.77	-.01	-.21
15	.74	.10	.42
5	-.74	.00	-.04
8	-.57	-.12	-.35
12	.05	.91	.10
21	.05	.85	.17
3	.06	.70	-.30
7	.21	.04	.83
11	.21	.06	.74
4	-.20	.03	-.67

The results show that both orthogonal and oblique rotation methods produced similar factor patterns. Three distinct factors emerged from both orthogonal and oblique rotations. The oblique rotation factor correlation matrix is presented in Table 11.

Table 11

Oblique Rotation Factor Correlation Matrix of QCORS

Factors	Factors		
	1	2	3
1	1.00		
2	.08	1.00	
3	.24	.02	1.00

The results show that the correlations among the three factors are negligible, which, according to Pedhazur and Schmelkin, confirms that the simpler orthogonal solution obtained is an acceptable factor structure of the Quality of Caregiver-Orphan Relationship Scale. The researcher adopted the orthogonal solution as the factor structure of QCORS and concluded that the three hypothetical factors or constructs underlying this scale are uncorrelated.

The 13 pure items and the QCORS factors. Factor analytic procedures performed in this study indicated that nine out of the 22 items in the original scale were complex, and 13 items were pure. The complex items (1, 2, 9, 14, 16, 17, 19, 20 and 22) were eliminated from the original scale, and the remaining pure items (3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 15, 18, and 21) were retained. The results of factor analysis also showed that QCORS is a three-factor instrument. Factor I contains seven items (5, 6, 8, 10, 13, 15 and 18); Factor II contains three items (3, 12, and 21); and Factor III contains three items (4, 7, and

11). The 13 pure items, and the three factors on which these items loaded are presented in Table 12.

Table 12
Pure Items by QCORS Factors

Item	Factor
5. Most of the time, my caregiver does not want to talk with me. T. true F. false	1
6. I like my caregiver very much. T. true F. false	1
8. My caregiver often turns down my requests. T. true F. false	1
10. My caregiver takes good care of me when I am sick. T. true F. false	1
13. If I had the choice, I would live with someone else. T. true F. false	1
15. Most times, my caregiver is concerned about my welfare. T. true F. false	1
18. I want to stay with my caregiver until I grow up. T. true F. false	1
3. My caregiver often beats me. T. true F. false	2
12. I do not usually talk to my caregiver. T. true F. false	2
21. My caregiver often distrusts me. T. true F. false	2
4. I often miss supper. T. true F. false	3
7. I usually get enough meals. T. true F. false	3
11. I rarely miss lunch. T. true F. false	3

Although factor analysis was used to identify the items in the original scale that were related to each other statistically, and to conclude that QCORS is a three-dimensional scale, factor analysis cannot name the factors that these items

represent. The investigator's responsibility is to examine the identified items and try to "name" the factor that they tap. The naming of factors depends on the meaning of the particular combination of observed variables with which that factor is highly correlated (Friedenberg, 1995).

In this study, I examined the items loading high on each of the three factors, and attempted to detect the essence of these items. Factor I was named "Intimacy", Factor II "Trust", and Factor III "Perceptions about Food." Both intimacy and trust were considered here as aspects of affection. "Affection" was conceptualized in this study as "nonromantic feelings of intimacy and trust between an orphan and his/her caregiver." "Intimacy" refers to "close personal relations", and "trust" is "the responsibility resulting from confidence placed in another person." After this establishment of the construct validity of QCORS, its reliability remained to be determined.

Final version of QCORS. The 13 pure items retained were mixed and renumbered to form the final version of QCORS that was then used in this study. In this final version of QCORS, Factor I contains seven items (1, 4, 5, 8, 9, 12, and 13); Factor II contains three items (2, 6, and 10); and Factor III contains three items (3, 7, and 11). The item numbers used in these three factors are new numbers obtained after mixing and renumbering the 13 items in the final version of the scale. The 13 items in the final version of QCORS are presented in Table 13.

Table 13

The 13-Item Quality of Caregiver-Orphan Relationship Scale

-
1. I want to stay with my caregiver until I grow up.
 T. true F. false
 2. I do not usually talk to my caregiver.
 T. true F. false
 3. I usually get enough meals.
 T. true F. false
 4. I like my caregiver very much.
 T. true F. false
 5. My caregiver takes good care of me when I am sick.
 T. true F. false
 6. My caregiver often distrusts me.
 T. true F. false
 7. I rarely miss lunch.
 T. true F. false
 8. If I had the choice, I would live with someone else.
 T. true F. false
 9. Most of the time, my caregiver does not want to talk with me.
 T. true F. false
 10. My caregiver often beats me.
 T. true F. false
 11. I often miss supper.
 T. true F. false
 12. Most times, my caregiver is concerned about my welfare.
 T. true F. false
 13. My caregiver often turns down my requests.
 T. true F. false
-

Respond by circling letter **T** or **F** if the statements are **true** or **false** for you. Do not circle both letter **T** and **F** for the same sentence. There are **no** right or wrong answers. The underlined **T** or **F** in the scale were scored one mark each.

Determination of the Reliability of QCORS

Reliability is defined in the *Standards for Educational and Psychological Testing* (1985, p. 19) as “the degree to which test scores are free from errors of measurement.” Reliability is also defined as “the consistency of measurement scores obtained for the same person upon repeated testing” (Dillon, 1997, p. 44). Three main types of reliability coefficients exist: test-retest reliability (stability), parallel forms (equivalence), and internal consistency. Of these three types of reliability, test-retest was most relevant to this study and was considered before QCORS was used in the main study. Test-retest reliability refers to the consistency of examinees responding to the same instrument at two different administrations with a time lapse between administrations. It is a measure of stability of responding over time and provides reliability evidence most appropriate when the test measures a stable trait not particularly affected by carryover effects. The relationship between orphans and their caregivers was considered stable and unlikely to be affected by carryover effects. For instance, an orphan who feels that his or her relationship with the caregiver is not intimate is likely to report this fact over a long period of time.

The test-retest reliability of the final version of QCORS was assessed and reported before this scale was used in data collection. This 13-item scale was administered to a group of 15 orphans who were randomly selected from Kisumu district. These orphans were retested after 10 days, and their responses were matched to those obtained on the first test. The number of subjects that should be involved in this field-testing and the time that should lapse before retesting were suggested by Cox (1996). According to Cox,

To establish the reliability of an instrument, select a group of 15 or so individuals who will not take part in the study, but who are thought to belong to the same category or categories of respondents as those in the

study. Administer the instrument to the group and then, 10 days later, administer it again to the same group. . . . The individuals in the reliability sample should be cautioned against trying to remember what they answered on the first administration. Ask them to answer as they currently feel (p. 37).

The subjects in the reliability sample were requested to answer to the items in the scale as subjects felt about their relationship with their caregivers. The responses on the first administration and those obtained in the second administration were correlated. A significant correlation, $r(15) = .82, p < .001$, was obtained. This correlation was sufficiently high to claim test reliability. According to Cox (1996), a resulting correlation above .75 could be used to claim enough consistency in response to give credibility to results of a test or study. Moreover, according to Burns (1980), if a correlation is used as a reliability coefficient, it must not only be significant, it must be high. A high test-retest coefficient should be in the .75 to .85 range.

The final version of QCORS used in this study was shorter than the original version. The original QCORS had 22 items while final version has 13 items. This shortening was not seen as a reduction in the reliability of the scale. The classical test theory principle that longer tests are more reliable than shorter tests is no longer acceptable. The new measurement principles—namely item-response theory (IRT) show that shorter instruments can be more reliable than longer ones. The former rule about test length and reliability conflicts sharply with current practice in adaptive testing, which is based on the new rule from IRT (Embretson, 1997). The next chapter reports how this final version of QCORS and three other research instruments were used in the main study.

CHAPTER IV

METHODS FOR STUDY 2

This chapter describes the methods used in Study 2, which was the main research conducted to compare school dropout rates, grade repetition, anxiety, and quality of caregiver-orphan relationship, in the three groups of orphans living in extended families, guardians' homes, and orphanages. Study 2 also investigated the plausible causes of the observed differences in these dependent variables among the three groups of orphans. This methods chapter provides a detailed description of this study's design. It describes the subjects and how the participants were recruited into the study. It also provides an overview of the research instruments used in data collection. Finally, it indicates the inferential statistics used in data analyses.

Design of the Study

This research was a causal-comparative study investigating conditions that already existed among the three groups of AIDS orphans in Kisumu District. The effects and causes of differences among the three groups of orphans were studied here in retrospect—they had already occurred. In other words, this was *ex post facto* research because the residential destinations studied here had already affected the education, anxiety, and quality of caregiver-orphan relationship. It attempted to establish connections between the residential destination of orphans and education, anxiety, and quality of caregiver-orphan relationship. School dropout rates and grade repetition rates were used in this study as indices of the educational status of orphans, while anxiety and the quality of caregiver-orphan relationship were used as indices of the psychological well-being of the orphans. School dropout, grade repetition, anxiety, and quality of caregiver-orphan relationship were the dependent variables, residential destination was the independent variable.

A comparative study like this one was best carried out in at least two stages particularly because the design did not allow for random assignment of subjects into groups and it did not permit the researcher to manipulate the independent variables (Fraenkel & Wallen, 1993). Thus, the cause-and-effect relationships in this study were not amenable to experimental manipulation. It was impossible to ask some AIDS orphans to stay with extended family members, others to dwell in guardians' homes, and others to live in orphanages. The first stage of this study was the observation of the effects and the second stage was the determination of the possible causes. The first part compared AIDS-orphaned children living in extended families, guardians' homes, and orphanages on the educational and psychological variables.

Significant differences on the indices of education and psychological well-being among the orphans in different destinations led to the second part of this study, which attempted to determine the possible causes of the differences. The plausible causes of the observed differences among the orphans investigated were: the criterion of selection used by caregivers during adoption of orphans; separation of AIDS-orphaned siblings during adoption; support received by caregivers from members of the orphan's extended family and from the government; and the amount of money spent on orphans by their caregivers. This study used a balanced design; an equal number of males and females, and an equal number of orphans living in extended families, guardians' homes, and orphanages were recruited.

Sample for Study 2

The sample involved in this study consisted of 450 total orphans selected from the lists of orphans obtained from sub-location administrative offices, the Agha Khan Rural Development offices, and six orphanages in Kisumu district. The AIDS orphans were the elements or sampling units or units of analysis

involved in this study. An element in a research is that unit about which information is collected, and it provides the basis for data analysis (Babbie, 1998). Stratified sampling method was used in this study to select elements from the sampling frame. The elements were stratified by two variables—residential destination and gender. The elements or subjects were first grouped according to their residential destination: extended families, guardians' homes, and orphanages. Second, the subjects within each residential destination were grouped according to gender. Linear systematic sampling method was then used to select 75 elements from each subgroup. Thus, a total of 150 subjects (75 boys and 75 girls) from each group (residential destination) were involved in this study. The orphans were between ages 6 and 15 years old.

This study also involved all caregivers of the orphans who were selected to participate in this study. Caregivers were not the elements or sampling units or units of analysis, but were the observation units. Observations units are people who are involved in research or study to provide information about the elements of a study (Babbie, 1998). For instance, in this study a caregiver was asked to indicate how much money he or she spent on the upkeep of each orphan under his or her care. A caregiver was also asked to indicate whether or not he or she received material/financial support from the government for the upkeep of the orphan. Such important pieces of information could only be accurately obtained from the caregiver and not from the orphan.

All caregivers were adults ranging in age from 22 to 80 years. The average age for the caregivers was 46.1 years. A caregiver in an extended family was an adult who had blood relations with the orphan under his or her care. Both the caregiver and the orphan came from the same *dhoot*, *libamba*, *keyo*, *Jokakwaro*, or *Jokawouro*, and were not marriageable. According to the Luo culture, marriage is prohibited between people who have a blood or biological relationship. A caregiver

in a guardian home was an adult who had no blood relations with the orphan, came from a different *dhoot* or tribe (*Jamwa*), and was traditionally marriageable to the orphan. Finally, a caregiver in an orphanage was an adult who managed the orphanage, had no blood relations with the orphans and was also traditionally marriageable to the orphans.

Instrumentation

In this study, four research instruments were used in data collection: Quality of Caregiver-Orphan Relationship Scale (QCORS), Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978), Biographical Form, and Caregivers Questionnaire. All these instruments except RCMAS were developed by the researcher. In the following section, each of these instruments is discussed in detail.

Quality of Caregiver-Orphan Relationship Scale (QCORS)

The QCORS is a new research instrument developed by the researcher, to measure the quality of relationship between orphans and their caregivers. The construction, and the establishment of construct validity and reliability of this scale are reported in Chapter III of this study. This scale consists of 13 true-false items. A response of "True" indicates that the item is descriptive of the child's feelings about his/her relationship with the caregiver or about food provided by the caregiver, whereas a response of "False" indicates that the item is generally not descriptive. The possible range of scores in this scale is from 0 to 13. In some items a response of "True" was awarded a mark while in other items a response of "False" was award a mark. A low total score indicates a poor quality of relationship, and a high total score indicates a better quality of relationship between an orphan and his/her caregiver.

The results of factor analysis conducted in study 1 showed that a three-factor structure is this scale's most psychologically and statistically sound factorial solution. The three factors underlying this scale are Intimacy, Trust, and Perception about Food. The reliability analysis conducted in study 1 showed that this scale has a test-retest reliability of .82. The descriptive statistics obtained in this study after administering this scale to 450 orphans showed that this scale has a mean of 9.3 and a standard deviation of 2.9

Revised Children's Manifest Anxiety Scale (RCMAS)

The Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978) was chosen because it provides a Total Anxiety Score and a Lie Score. This study aimed at comparing orphans living in the three residential destinations on total anxiety. This scale was also used because it is perhaps the best scale and arguably the most widely used self-report measure of children's anxiety available (Rabian, 1994). The scale is widely used both in research and in clinical settings and has proven high validity and high reliability coefficients. It was also chosen because it has been used in Africa. Pela and Reynolds (1982) used this scale to test the anxiety of 99 Nigerian children. Testing these children twice with a three-week interval between testings, the Total Anxiety score correlated .97 for boys, .98 for girls and .98 for the combined group. These remarkable results support the reliability of this scale in cross-cultural studies.

This scale is a revised version of the original *Children's Manifest Anxiety Scale* (CMAS). The original scale was quite popular as both a clinical and research instrument. More than 100 articles appeared in the literature over two decades, attesting to the usefulness of the CMAS. However, this scale was criticized because it did not cover all aspects of anxiety and because it did not cover the entire school age years. Teachers and researchers wanted an instrument that could be

used throughout the school years from Grade 1 through 12. The scale was revised to address all those concerns (Reynolds & Richmond, 1978). During the revision of the CMAS, teachers, child clinical psychologists, and school psychologists were polled regarding whether the existing items seemed related to manifestations of anxiety in children and whether any other indications should be included. Only items designated as “anxiety-related” by these groups were eligible for inclusion on the final RCMAS.

The RCMAS, subtitled “What I Think and Feel,” is a self-report instrument designed to assess the level and nature of anxiety in children and adolescents from 6 to 19 years old. This instrument may be administered either individually or to groups of respondents. The child responds to each statement by circling a “Yes” or “No” answer. A response of “Yes” indicates that the item is true of the child’s feelings or actions, whereas a response of “No” indicates that the item is largely untrue. The “Yes” responses are counted to determine a Total Anxiety score. RCMAS has 37 items (28 Total Anxiety items and nine Lie items). The scale was administered to a total of 329 school-age children in Grades 1 through 12 by the test developers. The Total Anxiety subscale had a mean of 13.84 and a standard deviation of 5.79 in the standardization sample. The Lie subscale had a mean of 3.56 and a standard deviation of 2.37.

In an effort to provide more clinical insight into the individual’s responses, the RCMAS provides four subscale scores in addition to the Total Anxiety score. The Total Anxiety score based on 28 anxiety items is divided into three anxiety subscales: Physiological Anxiety (10 items), Worry/ Oversensitivity (11 items), and Social Concerns/ Concentration (7 items). The remaining nine items on the RCMAS constitute the Lie subscale. The Lie subscale is designed to detect acquiescence, social desirability, or deliberate faking of responses. The raw scale on each subscale is the number of items circled “Yes” for that subscale. A high

score indicates a high level of anxiety or lie on that subscale. The items in the scale are presented in Appendix D.

Validity of RCMAS. The RCMAS is a multidimensional scale designed to assess anxiety in children. This multifactorial design of RCMAS corresponds to the multidimensional nature of anxiety. A considerable amount of evidence is available suggesting that anxiety is multidimensional in nature (Catell & Scheier, 1961; Naylor, 1978; Loo, 1979). Factor analysis was used in the assessment of the construct validity of RCMAS. Factor analysis of the 1956 version of the RCMAS by Finch, Montgomery, and Deardoff (1974), using a method of oblique rotation, produced three anxiety factors: Worry/ Oversensitivity, Physiological, and Concentration. In addition, Reynolds and Richmond (1979) reported a three-factor structure as the best factorial solution of this scale. Factor I, named “Physiological Manifestations of Anxiety,” contains nine items (1, 5, 9, 13, 17, 21, 25, 29, and 33). Factor II, named “Worry/ Oversensitivity,” contains 10 items (2, 6, 10, 14, 18, 22, 26, 30, 34, and 37). Factor III, named “Social Concerns/ Concentration,” contains nine items (3, 7, 11, 15, 19, 23, 27, 31, and 36). Reynolds and Richmond (1979) retained essentially the same factor solution as did Finch et al. (1974).

Reynolds and Paget (1981) conducted a major factor analysis of the RCMAS including Lie as well as Anxiety items, using varimax orthogonal rotation method and Kaiser’s eigenvalues greater than 1 criterion for factor retention. A five-factor structure emerged from this analysis. The three anxiety factors are essentially the same as those identified in the preliminary analysis by Reynolds and Richmond (1979). The Lie subscale divides into two factors, conveniently named “Lie 1” (items 4, 8, 12, 16, 20, and 24) and “Lie 2” (items 28, 32, and 36). These items present potentially confusing concepts that may account for the distinctive

response pattern to these items. Each of these items presents the child with a potential double negative (e.g., “I never lie,” to which the child has to respond either “Yes” or “No”).

Factor analytic evidence supports the presence of a strong general anxiety factor (Ag), represented by the Total Anxiety score, and the several subscales of anxiety as well as the Lie subscale. These subscales are relatively constant across many variables including sex, ethnicity, IQ, and some handicapping conditions. In this study, the Total Anxiety score and the score on the Lie subscale were considered. The other subscales were not considered because according to the authors of RCMAS, these subscales should be used cautiously in clinical settings and should be viewed only as an aid to hypothesis generation about the child and the child’s behavior problem.

Reliability of RCMAS. RCMAS is a highly reliable research instrument. Its high reliability has been demonstrated in a number of studies. For instance, Nunnally (1978) reported an internal consistency of .83 for the Total Anxiety scale after administering the scale to a sample of 329 children. Reynolds and Scholwinski (in press) have reported reliability data on the RCMAS for 531 children in Grades two through 12. The results of this large sample mirror those reported so far. The alpha was .82 for males and .83 for females. For the total group the alpha was .82. There was no ethnic or sex effect on reliability of this scale.

This instrument was used in this study for the first time to assess anxiety in orphans. Permission to use and adapt this scale was sought from the publishers of the scale (see Appendix E). In item 10, the word “parents” was replaced by the word “caregivers.” This replacement was necessary because the subjects were total orphans who lost both parents to AIDS and were under the care of caregivers. In

item 30, the word “sleep” was substituted for the word “bed” because a preliminary survey showed that most of these children do not sleep on beds, but on mats. The word “mat” was not used to replace the word “bed” because it is uncommon to say, “I worry when I go to mat at night,” and because some of these children, particularly those living in orphanages slept on beds.

Biographical Form

The Biographical Form (see Appendix F) was constructed by me and was used to collect data about gender, age, school dropout, grade repetition, and whether or not siblings were separated during adoption. It was also used to collect data about the residential destination of the orphans. Data collected with this form were analyzed in order to answer the questions posed in the first part of this causal comparative study, about the effects of residential destinations on the orphans. However, the data collected about whether or not the siblings were separated during adoption was used to answer questions posed in the second part of this study about the possible causes of the observed differences among the three groups of orphans involved in this study. The items in this instrument were scrutinized for clarity by my supervisor, by personnel in the department of Sociology, and by three Kenyan students. A pilot study showed that the items in this form were simple and understandable to the subjects.

Caregiver Questionnaire

This research instrument (see Appendix G) was constructed by me for use in this study. The Caregiver Questionnaire was used to collect data about criteria of selection of orphans used by caregivers during adoption; support received by the caregivers from members of the orphans’ extended families and from the government; and the amount of money spent by caregivers on the orphans. It was

also used to collect data about whether or not the caregivers considered the HIV status of the orphans at the time of adoption, and whether or not the AIDS patients made placement and custody arrangements for their children before dying. The questionnaire was completed by the caregivers. Data collected by this questionnaire and through the interview with the caregivers were mainly used to answer questions posed in the second part of this study, about the plausible causes of differences among the orphans.

Procedure

One hundred and fifty subjects from each residential destination were involved in the main study. The caregivers of the orphans who were selected to participate in this study were also involved. The caregivers and the orphans were informed about the objectives of the study, and their informed consent to participate was sought. Incidentally, all the orphans and caregivers who were selected to participate in the study gave consent. The research instruments used in this study were administered individually to the orphans and to their caregivers after establishing rapport. The researcher and his two research assistants administered RCMAS, QCORS, and the Biographical Form to the orphans, and also administered the Caregiver Questionnaire to the caregivers. In each residential destination, equal numbers of subjects were tested by the three test administrators.

Data Analysis

The data collected in this study were analyzed using the SPSS program. The scores of the subjects on the RCMAS, on the QCORS, and their responses on the Biographical Form were coded and entered into a computer file. Similarly the caregivers' responses to the items in the Caregiver Questionnaire were coded and entered into a computer file. No data were missing because the instruments used in

this study were administered individually to the orphans and to their caregivers. The researcher did all statistical analyses reported in this study. The .01 level of significance was used for statistical tests.

The major statistical procedures used in this study were, multivariate analysis of variance (MANOVA), univariate analysis of variance (ANOVA), Tukey's HSD *post hoc* test, Chi-square test, t-test for independent samples, and Pearson product-moment correlation.

CHAPTER V

RESULTS FOR STUDY 2

This chapter opens with a brief analysis of the potential confounding variables identified in this study. The chapter then reports the results of data analyses related to the effects of orphans' destination on education, anxiety, and quality of caregiver-orphan relationship. The chapter also reports the results of data analyses on the plausible causes of the observed differences on the dependent variables. This chapter ends with a report of results of data analyses pertaining to the process of adoption of orphans in Kisumu.

The reporting of statistical results in this chapter follows a fairly consistent pattern: a restatement of the research question, after which the pertinent descriptive statistics, inferential statistics, and appropriate conclusions are presented.

Reporting descriptive statistics is usually the first step in any statistical analysis regardless of its simplicity or complexity. Descriptive statistics enable a reader to examine the characteristics of individual variables before looking at the results of the inferential statistics (Gravetter & Wallnau, 1996).

Effects of Destination on the Dependent Variables

The first objective of this study was to examine the effects of residential destination on the education and psychological well-being of the orphans. This objective was achieved by investigating the effects of destination on four dependent variables: school dropout, grade repetition, anxiety, and quality of caregiver-orphan relationship. The results of the analyses pertaining to the effects of destination on these variables are reported in this section. However, before the data relating to the effects of destination on the dependent variables were analyzed, the effects of potential confounding variables were investigated.

Potential Confounding Variables

Two or more variables are said to be confounded if their effects on the dependent variables cannot be separated (Wiersma, 1995). Three potential confounding variables were identified in this study: gender, age, and the tendency to give untruthful responses. Gender was identified as a potential confounding variable because in a traditional society like Kisumu, girls are more likely than boys to repeat grades because of their involvement in domestic roles such as preparing meals and baby-sitting. Research also shows that girls tend to have higher anxiety scores than boys (Craig & Dobson, 1995). Thus, any differences observed among the three groups of orphans in grade repetition and anxiety could be attributed to the effects of gender, if the influence of gender was not controlled.

The possible effect of gender on the dependent variables was eliminated by selecting an equal number of male and female orphans from each of the three destinations that were involved in the study. Any differences observed among the subjects living in the three different types of destinations in the dependent variables could not therefore be attributed to the effect of gender.

Age was also a potential confounding variable because older children are more likely to drop out of school than younger ones. Reports also indicate that older children exhibit higher levels of anxiety than younger children (Strauss, Lease, Last, & Francis, 1988). Thus, any one of the three residential destinations with older children was likely to show a higher rate of school dropout and higher levels of anxiety, not necessarily because of the effect of the destination, but because of the effect of age of the orphans on school dropout and anxiety.

The tendency to give untruthful responses to the questionnaires also was a potential confounding variable because children under caregivers, particularly those living in nonkinship destinations (guardians' homes and orphanages) might be more likely to lie about their conditions of life. These children could be prone to

give untruthful responses because they could be victimized by their caregivers if they are caught to have revealed the truth about their life conditions to a stranger.

Effects of age and the tendency to lie. The possible confounding effects of age and the tendency to give untruthful responses were investigated by comparing the three groups of orphans living in extended families, guardians’ homes, and orphanages on these variables. Data about the ages of these orphans were collected with the Biographical Form. On this form, the subjects were asked to indicate their date of birth. From this information their ages were calculated by the researcher. The mean scores for age are reported in Table 14. The tendency to lie was measured using the 9 item-Lie subscale from the RCMAS. The mean scores for the lie subscale are presented in Table 14.

Table 14
Mean Scores on Age and Lie by Destination

Destination	Age		Lie	
	Mean	SD	Mean	SD
Extended families	11.5	3.4	4.2	1.6
Guardians’ homes	10.9	2.9	4.3	1.6
Orphanages	11.8	2.4	4.5	1.5

Two separate one-way ANOVAs were performed to compare the three groups of subjects on age and the tendency to lie. The results of these analyses showed a nonsignificant statistical difference in age among the three groups, $F(2, 447) = 3.02$, n.s; and another nonsignificant statistical difference among the groups in lie, $F(2, 447) = 1.76$, n.s. It was concluded that any difference among the three

groups of orphans on the dependent variables investigated in this study could not be attributed to the effects of age and the tendency to lie. The effects of destination on the four dependent variables are reported next.

Effect of Destination on School Dropout

The first question asked in this study was whether a difference existed in school dropout rates among AIDS-orphaned children living in extended families, guardians’ homes, and orphanages. The data analyzed to answer this question were collected by the Biographical Form. On this form, the subjects were asked to state whether or not they were attending school. The results of dropout rates are reported in Table 15.

Table 15
School Dropout Rates by Residential Destination

Destinations	Attends		Does not attend	
	N	%	N	%
Extended families	115	76.7	35	23.3
Guardians’ homes	132	88.0	18	12.0
Orphanages	148	98.7	2	1.3

The school dropout rates among orphans living in each of the three residential destinations were compared using the Chi-square test of association. The results of this analysis showed a statistically significant difference in school dropout rates among the orphans living in extended families, guardians’ homes, and orphanages, $\chi^2(1, N=450) = 33.76, p < .001$.

After finding this overall difference in school dropout rates among the three groups of orphans, the data were analyzed further by carrying out pairwise Chi-square tests. Pairwise comparisons are meaningful and easy to interpret because two groups are compared at a time. Pairwise Chi-square tests showed a statistically significant difference in school dropout rates between orphans living in extended families and guardians' homes, $\chi^2(1, N=300) = 6.62, p < .01$; between orphans living in extended families and orphanages, $\chi^2(1, N=300) = 33.46, p < .001$; and between orphans living in guardians' homes and orphanages, $\chi^2(1, N=300) = 13.67, p < .001$. It was concluded that school dropout rate was highest among orphans living in extended families and lowest among those living in orphanages.

The effect of residential destination on school dropout rate among the three groups of orphans was explored further by examining the effect of the residential destination on school dropout on female and male orphans separately. The responses of these children on whether or not they had dropped out of school are reported by destination and gender in Table 16.

Table 16
School Dropout by Residential Destination and Gender

Destinations	Attends		Does not attend	
	N	%	N	%
Females				
Extended families	51	68.0	24	32.0
Guardians' homes	67	89.3	8	11.7
Orphanages	73	97.3	2	2.7
Males				
Extended families	64	85.3	11	14.7
Guardians' homes	65	86.7	10	13.3
Orphanages	75	100.0	0	0.0

The results of Chi-square test of association indicated a statistically significant difference in school dropout rates among the female orphans living in extended families, guardians' homes, and orphanages, $\chi^2(1, N=225) = 24.64, p < .001.$; and another statistically significant difference exists in school dropout among the male orphans living in the three residential destinations, $\chi^2(1, N=225) = 10.03, p < .01.$ It was concluded that the residential destination had an effect on school dropout rate for both female and male orphans.

After finding these overall significant differences in school dropout rates for both female and male orphans, the data were analyzed further by carrying out

pairwise Chi-square tests. Pairwise Chi-square tests showed a statistically significant difference in school dropout rates between female orphans living in extended families and guardians' homes, $\chi^2(1, N=150) = 10.10, p < .001$; between female orphans dwelling in extended families and orphanages, $\chi^2(1, N=150) = 22.37, p < .001$; and between female orphans staying in guardians' homes and orphanages, $\chi^2(1, N=150) = 3.83, p < .05$. It was concluded that school dropout rate was highest among female orphans living in extended families and lowest among those staying in orphanages.

Furthermore, pairwise Chi-square tests indicated a statistically significant difference in school dropout rates between male orphans living in extended families and orphanages, $\chi^2(1, N=150) = 11.79, p < .001$; and between male orphans staying in guardians' homes and orphanages, $\chi^2(1, N=150) = 10.64, p < .001$. However, a statistically nonsignificant difference existed in school dropout rate between male orphans dwelling in extended families and guardians' homes, $\chi^2(1, N=150) = .06, n.s.$ It was concluded that school dropout rate was lowest among the male orphans living in orphanages and that there was no difference in school dropout between the male orphans staying in extended families and guardians' homes.

Effect of Destination on Grade Repetition

The second question addressed whether or not a difference exists in grade repetition rates among AIDS-orphaned children living in extended families, guardians' homes, and orphanages. On the Biographical Form, the orphans were asked to state whether or not they had repeated a grade. Their responses are summarized in Table 17.

Table 17

Grade Repetition by Residential Destination

Destinations	Repeated		Did not repeat	
	N	%	N	%
Extended families	98	65.3	52	34.7
Guardians’ homes	89	59.3	61	40.7
Orphanages	85	56.7	65	43.3

The rates of grade repetition among orphans living in each of the three residential destinations were analyzed using the Chi-square test of association. The results showed a statistically nonsignificant difference in grade repetition rates among the orphans living in extended families, guardians’ homes, and orphanages, $\chi^2(1, N=450) = 2.35$, n.s. It was concluded that no difference exists in grade repetition rate among orphans living in the three residential destinations. However, the pattern of difference in grade repetition was similar to the one for school dropout—lower in orphanages, moderate in guardians’ homes, and higher in extended families.

The effect of residential destination on grade repetition among the three groups of orphans was explored further by examining the effect of destination on grade repetition rate for female and male orphans separately. The responses of these children on whether or not they had repeated grade are reported by destination and gender in Table 18.

Table 18

Grade Repetition by Residential Destination and Gender

Destinations	Repeated		Did not repeat	
	N	%	N	%
Females				
Extended families	48	64.0	27	36.0
Guardians' homes	40	53.3	35	46.7
Orphanages	38	50.7	37	49.3
Males				
Extended families	50	66.7	25	33.3
Guardians' homes	49	65.3	26	34.7
Orphanages	47	62.7	28	37.3

The results of Chi-square test of association indicated a statistically nonsignificant difference in grade repetition rates among the female orphans living in extended families, guardians' homes, and orphanages, $\chi^2(1, N=225) = 2.69$, n.s.; and another statistically nonsignificant difference existed in grade repetition among the male orphans living in the three residential destinations, $\chi^2(1, N=225) = .27$, n.s. It was concluded that destination had no effect of grade repetition rate among orphans regardless of their gender. However, there is a different pattern of grade repetition percentages for females and males. The female orphans had lower

grade repetition percentages than the male orphans in all the three residential destinations.

Effects of Destination on Anxiety and Quality of Relationship Between Caregivers and Orphans

The third question asked whether or not a difference exists in anxiety among the three groups of AIDS orphans living in extended families, guardians' homes, and orphanages; and the fourth question asked whether or not a difference exists in quality of caregiver-orphan relationship among these three groups of AIDS orphans. The data analyzed to answer these questions were collected by the RCMAS and by QCORS respectively. The mean scores for anxiety and for the quality of caregiver-orphan relationship are presented in Table 19.

Table 19
Anxiety and Quality of Relationship as a Function of Destination and Gender

Destinations	Gender			
	Females		Males	
	Mean	SD	Mean	SD
Anxiety				
Extended families	14.1	3.0	13.2	2.8
Guardians’ homes	12.8	3.4	13.6	3.4
Orphanages	6.6	3.7	5.8	3.1
Quality of relationship				
Extended families	7.3	2.5	8.4	3.0
Guardians’ homes	8.9	2.7	8.3	3.0
Orphanages	11.3	1.6	11.7	1.5

The data collected on anxiety and quality of relationship were combined into one multivariate analysis for three reasons. First, these two dependent variables are logically part of the same response being studied. A poor relationship between orphans and their caregivers can be logically assumed to lead to high anxiety in the orphans. A poor relationship puts an orphan in a state of worry and fear, thereby raising the level of his/her anxiety. According to Finn & Mattson (1978), MANOVA should be used when the dependent variables are logically part of the same response irrespective of whether the correlation is positive, zero, or negative.

Second, these two dependent variables were found to be correlated. Bivariate analysis conducted in this study revealed that anxiety as measured by RCMAS and quality of relationship as measured by QCORS are significantly

correlated, $r(450) = -.69, p < .001$. The effects of independent variables on such related dependent variables can be more meaningfully considered in a single multivariate analysis (Stevens, 1996).

Third, MANOVA is the most powerful statistical test that could be used to simultaneously test the effect of destination on anxiety and on the quality of relationship between caregivers and orphans. As a general rule, one should always choose the most powerful statistical test that is valid for the question and data in hand (Freed, Ryan, & Hess, 1991). MANOVA is more powerful and may reveal differences not shown in separate ANOVAs. When responses to two or more dependent variables are considered in combination, group differences become apparent.

An overview of MANOVA is provided in Appendix H. This overview is provided in this study for two reasons. First, MANOVA is an advanced statistical procedure involving matrix algebra. An outline of matrix algebra is provided to facilitate the discussion of the multivariate test statistic used in this study. Second, the test statistics used in answering multivariate questions are abstract and require some explanation of the basic concepts involved.

Although MANOVA was the primary statistical procedure used to answer questions three and four, these questions were also answered by running ANOVA and *post hoc* tests. These two techniques were used because a complete answer to multivariate questions usually require a judicious mix of multivariate and univariate analyses (Dunbar, 1998).

A 3 x 2 between subjects multivariate analysis of variance was performed on the two dependent variables: anxiety and quality of caregiver-orphan relationship. Independent variables were residential destinations (extended families, guardians' homes, and orphanages) and gender (male and female). The overall results of this analysis are presented in Table 20.

Table 20

Effects of Destination and Gender on Anxiety and Quality of Relationship (Multivariate Analysis)

Source of variation	df	Multivariate statistic	
		Wilks' Lambda	<i>F</i>
Destination	(4, 886)	.47	103.19 ***
Gender	(2, 443)	1.00	.50 n.s
Destination by gender	(4, 886)	.97	2.93 n.s

****p* < .001 n.s = nonsignificant

With the use of Wilks' criterion, the combined dependent variables were significantly affected by destination, $F(4, 886) = 103.19, p < .001$, but not by gender, $F(2, 443) = .50, n.s.$, and not by their interaction, $F(4, 886) = 2.93, n.s.$ Thus, the overall multivariate analysis showed that there was a statistically significant difference in anxiety, and in the quality of caregiver-orphan relationship among the three groups of orphans. The results also showed a nonsignificant gender effect and nonsignificant destination by gender interaction effect on anxiety and on quality of relationship among the three groups of orphans.

In general, if multivariate analysis shows an overall significant difference among the groups, as was the case in this study, then at least one of the univariate *F*s will be significant. However, this may not always be the case. It is possible to find an overall significant difference among groups in multivariate analysis and yet find none of the univariate *F*s to be significant. In other words, a multivariate statistic may be significant when none of the univariate statistics is significant;

conversely, one or more of the univariate statistics may be significant when the multivariate statistic is not (Dunbar, 1998).

This inconsistency between MANOVA and ANOVA results may occur because no strong relationship exists between the multivariate test criteria and the separate univariate results. The multivariate test statistic reflects variation in the data as a whole and is influenced by relationship between dependent variables. In contrast, ANOVA reflects variation in one dependent variable and is not influenced by the relationship between dependent variables (Finn & Mattson, 1978). This is analogous to what happens occasionally in univariate analysis of variance. The overall F is significant, but when a *post hoc* test (for example, the Tukey procedure) is used to determine which pairs of groups are significantly different, no differences are found (Timm, 1975).

In this study, after finding an overall statistically significant difference in MANOVA results among the three groups of orphans in anxiety and quality of caregiver-orphan relationship, the groups and the dependent variables responsible for the global difference had to be determined. This could only be achieved through a more detailed breakdown of the groups and variables, and by pairwise comparisons. It was therefore reasonable to run ANOVA and *post hoc* tests after obtaining multivariate results.

Two separate two-way ANOVAs (3x2) were run to analyze the effects of destination, gender, and their interaction on anxiety and on the quality of the caregiver-orphan relationship. The results of these two analyses are presented in Table 21.

Table 21

Effects of Destination and Gender on Anxiety and on Quality of Relationship (Univariate Analysis)

		Univariate statistic	
Source of variation	df	MS	F
Anxiety			
Destination	(2, 444)	2618.06	249.85 ***
Gender	(1, 444)	6.97	.67 n.s
Destination by gender	(2, 444)	36.17	3.45 n.s
Quality of relationship			
Destination	(2, 444)	496.46	81.64 ***
Gender	(1, 444)	5.12	.84 n.s
Destination by gender	(2, 444)	25.95	4.27 n.s

*** $p < .001$, n.s = nonsignificant

The results of the two univariate ANOVAs showed a statistically significant difference in anxiety among the three groups of orphans living in the extended families, guardians’ homes, and orphanages, and another statistically significant difference in the quality of caregiver-orphan relationship among the three groups of orphans. However, the results showed statistically nonsignificant gender and destination by gender interaction effects.

Finding an overall significant difference among the three groups in anxiety and in the quality of caregiver-orphan relationship created a need for further

analysis—to carry out pairwise comparisons. Pairwise comparisons are easy to interpret because they are like simple t-tests for independent groups and are often more meaningful because they involve two groups only. Two pairwise comparisons are commonly used: planned comparisons and *post hoc* comparisons. Planned comparisons are conducted in studies where the researcher is able to specify, prior to data collection, highly explicit alternative hypotheses with respect to group differences in the dependent variables. On the other hand, *post hoc* involve comparing pairs of groups after finding a significant omnibus *F*-ratio. *Post hoc* comparisons are normally conducted in studies where the researcher is unable to provide, prior to data collection, alternative hypotheses with respect to pairwise group differences (Tabachnick & Fidell, 1983).

In this study, *post hoc* comparisons were carried out because the researcher was unable to predict prior-to-data-collection groups differences with respect to the two dependent variables investigated. The researcher was unable to make this prediction because this study involves theory generating more than theory testing. No research has compared the three groups of orphans in anxiety and in quality of relationship. A total of six pairwise comparisons were carried out, three comparisons about the differences in anxiety between pairs of the three groups of orphans, and three comparisons about the differences in quality of caregiver-orphans relationship. Tukey's HSD *post hoc* test (Tukey, 1953) was used in the analysis because it is the most commonly used test in psychological research and requires that the sample size *n* be the same for all groups (Ramsey, 1993). This study had a balanced design, so equal sample sizes were involved. The results of these *post hoc* tests are reported in Table 22.

Table 22
Pairwise Comparisons of Means for Anxiety and for Quality of Relationship - Tukey's HSD *Post hoc* Results

Pairwise comparisons	Mean difference	Sig.
Anxiety		
Extended families vs. guardians' homes	0.4	.49 n.s
Guardians' homes vs. orphanages	7.0	.00***
Orphanages vs. extended families	7.4	.00***
Quality of Relationship		
Extended families vs. guardians' homes	-0.7	.04*
Guardians' homes vs. orphanages	-2.8	.00***
Orphanages vs. extended families	3.4	.00***

*** $p < .001$; * $p < .05$; n.s. = nonsignificant.

The results of these *post hoc* tests showed a statistically significant difference in anxiety between orphans living in orphanages and extended families, and between orphans living in orphanages and guardians' homes. However, a nonsignificant statistical difference in anxiety existed between orphans living in extended families and guardians' homes. Finally, a statistically significant difference in the quality of caregiver-orphan relationship existed among the three groups of orphans.

It was concluded that orphans living in orphanages have lower anxiety than those living in extended families and in guardians' homes. It was also concluded that orphans in orphanages enjoy a better quality of relationship between them and

their caregivers than those living in the other two destinations. Finally, it was concluded that orphans living in guardians' homes have a better quality of relationship between them and their caregivers than those living in extended families; however, these two groups of orphans are comparable in their levels of anxiety.

Plausible Causes of the Differences Observed

Five possible causes of the differences observed among the three groups of orphans on the dependent variables were investigated: criterion of selection, separation of AIDS-orphaned siblings, support from members of the orphans' extended families, support received from the Kenyan government, and the amount of money spent on orphans. The data pertaining to these possible causes were analyzed in order to achieve the second objective of this study. The results of these analyses are reported next.

Criterion of Selection Used by Caregivers During Adoption of Orphans

The fifth question posed in this study asked about the criterion of selection caregivers use during adoption of orphans. The data analyzed to answer this question were collected by the Caregiver Questionnaire. On this questionnaire, the caregivers were asked to indicate the major criterion they used to adopt the orphan under their care. They were asked to choose one out of five criteria: the age of orphan, gender of orphan, mental health of orphan, physical health of orphan, and desperation condition of orphan. The descriptive statistics showed that 98.7 per cent of all caregivers used the orphans' desperate condition as the criterion of selection during adoption. Only 1.3 per cent of the caregivers (6 caregivers in the guardians' homes) used the physical condition of orphans as the criterion of

selection. It was concluded that the caregivers in Kisumu district basically used the desperate condition of orphans as the criterion of selection, and that any differences observed in the dependent variables among the three groups of orphans could not be explained by the criterion of selection used by caregivers during adoption.

Separation of AIDS-Orphaned Siblings During Adoption

The sixth question posed in this study asked whether or not the siblings orphaned by AIDS were separated during adoption. The data analyzed to answer this question were collected by the Biographical Form. On this form, the orphans were asked to state whether or not they had brothers and sisters and whether or not they were staying together with their siblings in their residential destination. In this study, 13 orphans involved had no siblings. Their responses to this question were not included in the analysis. The results of responses of the subjects who had siblings are reported in Table 23.

Table 23
Separation of AIDS Orphaned Siblings by Residential Destination

Destinations	Not separated		Separated from siblings	
	<i>N</i>	%	<i>N</i>	%
Extended families	125	85.6	21	14.4
Guardians' homes	10	6.8	136	93.2
Orphanages	65	44.8	80	55.2

A Chi-square test of association was done to answer this question. The results showed a statistically significant difference among the three groups of orphans in sibling-separation during adoption, $\chi^2(1, N=437) = 36.4, p < .001$.

After finding this overall difference in sibling separation rates among the three groups of orphans, the data were analyzed further by carrying out pairwise Chi-square tests. The tests showed a statistically significant difference in sibling separation rates between orphans living in extended families and guardians' homes, $\chi^2(1, N=300) = 179.97, p < .001$; between orphans living in extended families and orphanages, $\chi^2(1, N=300) = 53.88, p < .001$; and between orphans living in guardians' homes and orphanages, $\chi^2(1, N=300) = 52.68, p < .001$. It was concluded that sibling separation rate was highest among orphans living in guardians' homes and lowest among those living in extended families. In other words, orphans adopted by members of their extended family were least likely to be separated from their siblings while those adopted in guardians' homes were most likely to be separated from their siblings.

The plausible effect of separation of siblings on the dependent variables investigated in this study was further explored by testing whether or not a difference exists in anxiety and in quality of caregiver-orphan relationship between orphans who were separated from their siblings and those who were not separated during adoption. Anxiety and quality of caregiver-orphan relationship were identified for this analysis because it was likely that separation of siblings after the death of parents could have an effect on these children's levels of anxiety, and because the separation of siblings during adoption could improve or strain the quality of the relationship between orphans and their caregivers.

A *t*-test for independent samples was used to test whether or not a statistically significant difference exists in anxiety and in the quality of caregiver-

orphan relationship between these two groups of orphans within each residential destination. This test statistic was chosen because the analysis involved comparing two groups of orphans (separated and not separated) in anxiety. The mean scores on anxiety and on the quality of caregiver-orphan relationship for orphans who were separated and for those who were not separated from their siblings during adoption by residential destination are presented in Table 24.

Table 24
Anxiety and Quality of Relationship as a Function of Separation and Destination

Destinations	Not separated			Separated from siblings		
	N	Mean	SD	N	Mean	SD
Anxiety						
Extended families	125	13.5	2.9	21	14.2	3.0
Guardians' homes	10	13.8	4.6	136	13.1	3.3
Orphanages	65	5.2	2.8	80	7.0	3.7
Quality of Relationship						
Extended families	125	7.89	2.78	21	7.86	3.02
Guardians' homes	10	7.40	2.84	136	8.70	2.83
Orphanages	65	11.40	1.20	80	11.25	1.78

The results of *t*-tests showed that within orphanages, there was a statistically significant difference in anxiety between the orphans who were separated and those who were not separated from their siblings during adoption, $t(143) = 3.12, p < .01$. Within extended families, there was a statistically nonsignificant difference in anxiety between the orphans who were separated and those who were not separated from their siblings, $t(144) = .94, n.s.$ Similarly, within guardians' homes, there was a statistically nonsignificant difference in anxiety between the orphans who were separated and those who were not separated from their siblings, $t(144) = .62, n.s.$ It was concluded that separation of siblings during adoption had a significant effect on anxiety of orphans living in orphanages, and no significant effect on those living in extended families and guardians' homes. The separation of siblings, therefore could not have accounted for the observed differences in anxiety among the three groups of orphans.

The results of *t*-tests showed that within extended families, there was a nonsignificant statistical difference in quality of caregiver-orphan relationship between the orphans who were separated from their siblings and those who were not separated from their siblings during adoption, $t(144) = .046, n.s.$; within guardians' homes, there was a nonsignificant statistical difference in quality of caregiver-orphan relationship between the orphans who were separated from their siblings and those who were not separated, $t(144) = 1.39, n.s.$; and within orphanages there was another nonsignificant statistical difference in quality of caregiver-orphan relationship between the orphans who were separated from their siblings and those who were not separated, $t(143) = .58, n.s.$ It was concluded that within each of the three residential destinations investigated, separation of siblings during adoption did not affect the quality of caregiver-orphan relationship. More importantly, separation of orphans did not explain differences between destinations in the quality of caregiver-orphan relationship. However, it is

important to note that the comparisons made here should be interpreted with caution because of the small group sizes involved in the analysis.

Support Received by Caregivers from Extended Families and Government

The seventh question asked whether or not a difference exists in the amount of support caregivers living in the three types of residential destinations received from members of the orphans’ extended families and from the government. The data analyzed to answer this question were collected by administering the Caregiver Questionnaire to the subjects. The caregivers were asked to indicate whether or not they were receiving material/financial support from the government and from members of the orphans’ extended families. The frequency distribution indicated that the caregivers from the three residential destinations received no support from the government; however, they did receive some support from members of the extended families. The results of their responses are reported in Table 25.

Table 25
Support Received from Extended Families by Caregivers by Residential Destination

Destinations	Received support		No support received	
	N	%	N	%
Extended families	29	19.3	121	80.7
Guardians’ homes	3	3.0	147	97.0
Orphanages	0	0.0	150	100.0

The Chi-square test of association results showed a statistically significant difference in the frequency of material/financial support received by caregivers in the three residential destinations from the members of the orphans' extended families, $\chi^2(2, N=450) = 54.14, p < .001$. It was concluded that caregivers living in the extended families were most likely to receive support from the orphans' extended family members and that those running the orphanages were most unlikely to receive support for the upkeep of orphans.

After finding this overall difference in the frequency of material/financial support received by caregivers in the three residential destinations from the members of the orphans' extended families, the data were analyzed further by carrying out pairwise Chi-square tests. The tests showed a statistically significant difference in the frequency of material/financial support received by caregivers living in extended families and guardians' homes, $\chi^2(1, N=300) = 23.57, p < .001$; between caregivers living in extended families and orphanages, $\chi^2(1, N=300) = 32.0, p < .001$; and a nonsignificant statistical difference between the frequency of support received by caregivers living in guardians' homes and orphanages, $\chi^2(1, N=300) = 3.02, n.s.$ It was concluded that caregivers living in extended families were most likely to receive material/financial support from the orphans' extended family members, and that guardians' homes and orphanages did not differ in the likelihood of receiving material/financial support from the orphans' extended family members.

Amount of Money Spent on Orphans by Destinations

The eighth question asked whether or not a difference exists in the amount of money spent by caregivers on AIDS-orphaned children in extended families, guardians' homes, and orphanages. On the Caregiver Questionnaire, the caregivers were asked to indicate how much money in Kenya shillings they spent monthly on

each orphan under their care. The results of residential destination mean scores are reported in Table 26.

Table 26
Monthly Expenditure on Orphans by Residential Destinations

Destinations	Expenditure (Kshillings)
Extended families	319.30
Guardians’ homes	750.40
Orphanages	4,263.30

This question was answered by running an ANOVA and Tukey’s HSD *post hoc* test. A one-way ANOVA was performed to test whether or not a significant difference existed in the amount of money spent by caregivers on orphans. The results of this analysis showed a statistically significant difference in the amount of money spent monthly by caregivers in extended families, guardians’ homes and orphanages, $F(2, 447) = 2658.82, p < .001$.

Tukey’s HSD *post hoc* test was run for pairwise comparisons. The result of this test showed a statistically significant difference in average monthly expenditure on orphans between caregivers living in extended families and guardians’ homes, caregivers in extended families and orphanages, and caregivers in guardians’ homes and orphanages. It was concluded that orphanages spend the highest amount of money on orphans and that extended families spend the least amount of money on the upkeep of orphans.

After finding this overall statistically significant difference in the amount of money spent by caregivers on the upkeep of orphans in the three residential destinations, within group data analysis was conducted to determine whether or not

there was correlation between the amount of money spent by caregivers on the orphans and anxiety of orphans; and whether or not there was correlation between the amount of money spent and the quality of caregiver-orphan relationship. The results of these analyses showed that there was a statistically nonsignificant correlation between the amount of money spent and anxiety scores of orphans residing in orphanages, $r(150) = -.17$, n.s.; a statistically nonsignificant correlation between these two variables for orphans living in extended families, $r(150) = .005$, n.s.; and another nonsignificant statistical correlation between these two variables for orphans living in guardians' homes, $r(150) = -.14$, n.s. It was concluded that there was a statistically nonsignificant correlation between expenditure on orphans and anxiety for orphans living in the three residential destinations.

Finally, within-group data analysis indicated that there was a statistically nonsignificant correlation between the amount of money spent by caregivers on the upkeep of orphans and the quality of caregiver-orphan relationship in orphanages, $r(150) = .004$, n.s.; in extended families, $r(150) = .154$, n.s.; and in guardians' homes, $r(150) = .135$, n.s. It was concluded that, although there was a between group statistically significant difference in the amount of money spent by caregivers on the upkeep of orphans, there was a statistically nonsignificant correlation between the amount of money spent by caregivers on the orphans and the quality of caregiver-orphan relationship in each of the three residential destinations investigated in this study. This suggests that the difference in anxiety and quality of caregiver-orphan relationship between the three destinations was unlikely to be caused by the differences in the amount of money spent on the children.

Adoption Process of AIDS Orphans

The third objective of this study was about the adoption process in Kisumu. This objective was achieved by answering questions about whether or not AIDS

patients made placement and custody plans for their children before dying, and by determining whether or not caregivers considered the HIV status of the orphans before adoption. The results of data analyses relating to these questions are presented next.

AIDS Patients' Plans on Placement and Custody of Orphans

The ninth question asked what proportions of AIDS patients in Kisumu district made placement and custody plans before dying. The data analyzed to answer this question were collected with the Caregiver Questionnaire. On this questionnaire, the caregivers were asked to state whether or not they were contacted by the deceased parents about the placement and custody of their children. The results showed that 96.8 per cent of the deceased parents did not contact the caregivers about placement and custody of their children, and only 3.2 per cent of the deceased parents made such contacts before dying. All these deceased parents who made plans contacted caregivers in guardians' homes about custody of their children. It was concluded that vast majority of AIDS patients in Kisumu district did not make placement and custody arrangements for their children before dying.

Consideration of HIV Status of Orphans During Adoption by Caregivers

The final question asked if caregivers in Kisumu district consider the HIV status of the orphans before adoption. On the Caregiver Questionnaire, the caregivers were asked to state whether or not they considered before adoption the HIV status of the orphans under their care. The results showed that 99.6 per cent of caregivers did not consider the HIV status of the orphans at the time of adoption. Only 0.4 per cent of the caregivers (two caregivers in guardians' homes) considered the HIV status of the orphans before adoption. It was concluded that caregivers in

Kisumu district did not consider the HIV status of the AIDS orphans before adoption regardless of their institution of care.

CHAPTER VI

DISCUSSION

This final chapter discusses the findings of this study. In the discussion, attempts were made to integrate the findings from other related studies. The chapter opens with a summary and a discussion of my results on the effects of residential destination on the education of AIDS orphans in Kisumu. This is followed by another summary and discussion of my findings about the effects of residential destinations on the psychological well-being of the orphans. The chapter also contains a summary and discussion of my results about the process of adoption of AIDS orphans in Kisumu. The chapter ends with the implications for policy makers, recommendations for further research, delimitations, limitations, and the conclusions of this study.

Education of AIDS Orphans in Kisumu

This study investigated the effects of residential destination on the school dropout and grade repetition of AIDS orphans in Kisumu. The results showed a significant difference in school dropout rates among the three groups of orphans. Analyses indicated a statistically significant difference in school dropout rates between orphans living in extended families and guardians' homes; between orphans dwelling in extended families and orphanages; and between orphans residing in guardians' homes and orphanages. It was concluded that school dropout rate was highest among orphans living in extended families and lowest among those staying in orphanages.

This study also examined five possible causes of the differences observed among the three groups of orphans in the educational and psychological variables investigated. The five possible causes were criterion of selection used during adoption, separation of siblings during adoption, material/financial support received

by caregivers from members of the orphans' extended families, support received by caregivers from the government, and the amount of money the three groups of caregivers spent on the upkeep of the orphans. Four of these five factors, criterion of selection, material/financial support received by caregivers from the members of the orphans' extended families, support received by caregivers from the Kenyan government, and the amount of money spent on the upkeep of orphans by caregivers, could affect the rate of school dropout and grade repetition of these children.

The results showed that 98.7 per cent of all caregivers used the orphans' desperate condition as the criterion of selection during adoption. Only 1.3 per cent of the caregivers used the physical condition of orphans as the criterion of selection. It was concluded that the caregivers in Kisumu district basically used the desperate condition of orphans as the criterion of selection, and that any differences observed in the school dropout and grade repetition among the three groups of orphans could not be explained by the criterion of selection used by caregivers during adoption.

The results also indicated that caregivers in the three residential destinations received no support from the government, however, they did receive some support from members of the orphans' extended families. There was a significant difference in the frequency of material/financial support received by caregivers in the three residential destinations from the members of the orphans' extended families. The caregivers in the extended families were most likely to receive support, while caregivers running the orphanages received no support from the orphans' extended family members for the upkeep of orphans. The difference in the frequency of support received by the caregivers in the three residential destinations from the members of the orphans' extended families could not explain the differences observed in school dropout and grade repetition rates among the three groups of orphans because extended families, which were most likely to

receive support had the highest rate in school dropout but were comparable to the other destinations in grade repetition.

The results showed that orphanages spent the highest amount of money on orphans and that extended families spent the least amount of money on the upkeep of orphans. It was also concluded that there was an inverse relationship between the amount of money spent on orphans and the rate of school dropout in these children. The orphanages, which spent the highest amount of money on the orphans had the lowest school dropout rate, and the extended families, which spent the least amount of money on the upkeep of orphans, had the highest rate of school dropout.

This correspondence between the average amount of money spent on orphans by the three destinations and the school dropout rate among the three groups of orphans is comparable to the pattern of relationship which exists between socioeconomic status (SES) and school dropout rate in the general population. Research has shown that socioeconomic status of the parents is one of the main factors influencing school dropout. Peng and Takai (1983) reported 17 per cent dropout rate for children from low SES, 9 per cent for middle class, and 5 per cent for high class. The factors within the low SES that contribute to high school dropout rate include, low income, lack of learning materials and opportunities at home, and low educational and occupational attainment of the parents. This research report about the effect of SES on school dropout supports my research finding and could be used to explain the effect of residential destination on school dropout.

Perhaps school dropout rate was low among children living in the orphanages because these institutions invested more money into their education. The cost of education is quite high in Kenya, particularly at secondary school level. Most secondary schools in this country are boarding schools where students are

accommodated in dormitories during school term. The average annual cost of tuition and boarding fees per child in a secondary school is about Kshs. 20,000 (US\$300). This is a very high sum of money in a country where the average national annual income for employees is Kshs. 14,675 (US\$210; Obel, 1995). Thus, the cost of educating one child in a secondary school per year is higher than the average national annual income for employees in Kenya.

This bad picture is worsened by the fact that the average number of children per family in the country is five, and many parents have two or more children in secondary school years. Educating two or more children in secondary schools in Kenya is a nightmare to most parents. In fact, secondary school education is no longer accessible for children from the low class, because their parents cannot afford the fees. Parents in the middle class in Kenya struggle hard to see their children through secondary school. Moreover, parents in the middle class who are struggling to educate their biological children may not have any money left to educate the orphans under their care. Research in Kenya and in other parts of Africa has shown that children whose parents died of AIDS are more likely to drop out of school than children in the general population (NASCP, 1996). This high school dropout rate among orphans occur because caregivers of these children favor their own biological children when it comes to payment of school fees.

School dropout is caused by several factors, which are well summarized by the Education Commission of the States (1985) under the three categories of youth at risk for dropping out of school. The Education Commission of the States lists three categories of youth at risk for dropping out: the alienated, the disadvantaged and alienated, and the disadvantaged. The alienated group is identified as those uninterested in or dissatisfied with values presented by school and work. They come from middle class, urban, and rural settings. The disadvantaged and alienated exhibit alienation symptoms and lack basic social and academic skills, family

support, and self-esteem. The disadvantaged group is defined as those students who have family support and motivation to succeed, but suffer effects of economic deprivation.

The descriptions under each of these three categories of youth at risk for dropping out of school in the US do not describe well the AIDS orphans' situation in Kisumu. Although AIDS orphans might be categorized under the disadvantaged group, they do not fit into this category because of the reason why they are considered disadvantaged. Whereas the disadvantaged group in the US come from poor families, AIDS orphans in Kisumu are disadvantaged primarily because their families have been dismantled by the scourge. But, because research shows that AIDS orphans are more likely to be adopted by poorer families (Obel, 1995), they might be lumped together into the disadvantaged group. However, the findings of this study show that this categorization may not be correct. The results of this study show that the extent to which an orphan is disadvantaged depends on the residential destination to which he or she ends up in after the death of the parents. The orphans living in the extended families are more likely to drop out of school than those staying in guardians' homes and orphanages.

Although the Kenyan government spends 30 per cent of its annual budget on education, most of the educational expenses incurred in both primary and secondary schools are met by the parents. The government expenditure on education largely goes to pay salaries of teachers in all segments of the educational system, and to pay salaries of education officers in the Ministry of Education and Human Resource Development. In both primary and secondary schools parents buy textbooks and exercise books for their children. Furthermore, they pay for the construction and furnishing of classrooms, construction and equipment of workshops, and for co-curricular activities in schools. Parents with children in secondary schools have an additional responsibility of paying tuition and boarding

fees. These expenses are too heavy for most parents in the country, particularly for those in the low class. Unfortunately, it is the parents in the low class that are more likely to adopt the AIDS-orphaned children (NASCP, 1996).

School dropout is a more serious problem in poverty stricken areas like Kisumu, because dropouts have difficulty in finding what to do after leaving school. The consequences of dropping out are perhaps the most critical reason for concern for those who are interested in human growth and development. Studies have shown that youths failing to complete high school are more likely to become an economic burden to the society (Wells, 1990). The weight of this burden varies from country to country. In Japan, dropouts are given specific help immediately after leaving school so that they can become productive members of the workforce. In Germany, dropouts fit into an apprenticeship system that provides positive work experience and leads to certification. In the US, dropouts may find menial jobs, fill the welfare rolls or end up in jails (Usdan, 1986).

The fate of school dropouts in Kisumu and in other parts of Kenya is worse than those in the US. These youngsters have difficulty finding menial jobs, the country has no social welfare system, and the condition of prisons in Kenya is horrifying. In a country like Kenya where there is no social welfare system, when a teen drops out of school, he or she is very likely to turn to illegal means of surviving. Unfortunately, being sent to prison for an illegal act in Kenya today is like being sentenced to death. The death rate in the Kenyan prisons is quite high because of poor nutrition and poor sanitary conditions. Even the judges of the High Court who sentence people to prison were shocked by the deplorable state of these prisons (Lumwamu, 1999, November 4).

Grade Repetition

Grade repetition was quite high among the orphans involved in this study. The results showed that a total of 272 (60.4 per cent) of the 450 orphans involved in this study had repeated a grade. Analysis indicated a nonsignificant difference in grade repetition rates among the three groups of orphans. It was concluded that no difference exists in grade repetition rate among orphans living in extended families, guardians' homes, and orphanages. However, the pattern of difference in grade repetition was similar to that in school dropout rates among the three groups of orphans involved in this study—low in orphanages, moderate in guardians' homes, and high among orphans staying in the extended families. One might assume that a nonsignificant difference in grade repetition existed among the three groups of orphans because death of these children's parents disrupted their schooling, resulting in nonpromotion to the next grades. This is a reasonable and logical explanation for grade repetition among orphans. The findings of this study, however, indicated that the three groups of orphans repeated grades for different reasons.

The subjects who had repeated grades were asked in the Biographical Form to indicate why they were not promoted to the next grade. They were given five possible causes of grade repetition and were asked to choose one: lack of fees; sickness; absenteeism from school; poor performance in class work; and other. The frequency distribution showed that the most frequently cited reason for grade repetition for orphans living in the extended families was lack of fees (43 per cent). Orphans dwelling in the guardians' homes and orphanages cited poor performance (62 per cent; 82 per cent respectively) as their major reason for repeating grade. It was concluded that, although there were no differences among the three groups of orphans in grade repetition, the reasons for repeating differed. If it was true that disruption of schooling caused by death of their parents was the major reason for

their repeating of grades, then they would have chosen absenteeism from school as the major reason for nonpromotion to the next grades.

One of the factors that could have contributed to this high rate of grade repetition observed among the orphans, but was not investigated, was the attitude of teachers in Kisumu towards grade repetition as a method of improving academic performance among students. Research shows that some teachers favor repetition because they believe that an extra year will enable students to catch up academically and improve their social skills (Clarizio, Mehrens, & Hapkiewicz, 1994). It was therefore possible that some orphans were made to repeat grades because their class teachers believed that this practice was good for them.

Although grade repetition is a traditional way of handling unsatisfactory achievement, evidence from research is not supportive of this practice. In a meta-analysis of 44 studies comparing 4,208 nonpromoted students and 6,924 promoted students, Holmes and Matthews (1984) found that, in general, nonpromoted students fared less well than promoted students in the subsequent year of school. Promoted students outperformed matched nonpromoted students on both academic and social measures. They concluded that grade repetition does not ensure greater mastery of subject matter, nor does it facilitate emotional growth and development.

Smith and Shepard (1994) found that students who are held back suffer a stigma that impinges on their motivation, self-confidence, and self-concept. These students tend to believe that nonpromotion was a punishment, and they often view themselves as failures. However, Bracey (1988) reported that nonpromoted students improve their academic performance when they are given special instruction assistance during the year they are retained. Furthermore, socially nonpromoted students also perform better and improve their self-esteem if they receive special educational help. Bracey concluded that grade repetition alone is not enough to improve academic performance and social skills in students. Students

who repeat grades should be offered special academic and social instructional assistance. In Kisumu and in other parts of Kenya there are large numbers of students who repeat grades, however, there is no evidence whatsoever that these children receive special instruction to improve their academic performance and social skills.

Psychological Status of AIDS Orphans in Kisumu

This study investigated the effects of residential destination on the anxiety and the quality of caregiver-orphan relationship. The results showed that orphans living in orphanages had lower anxiety scores than those living in extended families and in guardians' homes. It was also found that orphans dwelling in orphanages enjoyed a better quality of relationship between them and their caregivers than those living in the other two destinations. Finally, it was found that orphans living in guardians' homes had a better quality of caregiver-orphan relationship than those staying in extended families, however, these two groups of orphans had similar levels of anxiety.

Perhaps the most intriguing findings of this study were that AIDS-orphaned children living in orphanages were lower in anxiety than those living in the other two residential destinations; and that the quality of caregiver-orphan relationship was higher for orphans living in orphanages than for those dwelling in both the guardians' homes and extended families. These findings are important and thought provoking because they contradict the general belief in Africa that orphans are better cared for by members of their extended families. If I had based my reasoning on this belief, I would have postulated at the beginning of this study that orphans living in extended families would be lower in anxiety, and higher in the quality of caregiver-orphan relationship than those staying in the other two residential destinations. I would have hypothesized so because the orphans in the extended

families live with their kissing kin—people they had some bonding with even before the death of their parents. But because of scarcity of research data on the relationship among these three variables for AIDS orphans, I was unable to formulate these hypotheses. The results of data analysis conducted in this study would not have supported my unstated hypotheses had I posited them.

The findings of this study also contradict the common assumption that a cordial relationship exists between the orphans and their kinsmen and kinswomen in the extended families. Perhaps this assumption was realistic in the past when the cost of living was low in Africa, and the need for formal education was nonexistent. Today, this assumption could only apply in an hypothetical-ideal situation where members of the extended families had sufficient funds to support their biological children, orphans and other dependents, or had no children or fewer children to raise, or adopted an orphan when they needed a child to meet their needs. But, in the present situation in Kisumu, as reflected by the findings of this study where extended families spent the least amount of money on the orphans, had their own biological children to raise and only adopted the orphans because they felt obligated and because these children were desperate and had nowhere to turn to, it would be unrealistic to expect the orphans under their care to be lower in anxiety and to have a high quality of caregiver-orphan relationship.

The results of this study also challenge the decision of some African countries to close the orphanages, in a continent where there are so many desperate children, and where very few foster homes exist. For instance, in Zambia, the old socialist regime preferred to put orphans into state institutions, but the current government is arguing that orphanages are an expensive way of making children miserable and has closed almost all of them (Staff, 1999, August 14).

The five plausible causes of the differences observed among the orphans living in the three residential destinations investigated in this study could not fully

explain the differences that existed among the three groups of orphans in anxiety and in the quality of caregiver-orphan relationship. The findings of this study showed that caregivers in Kisumu district basically used the desperate condition of orphans as the criterion of selection. Thus, any differences observed in anxiety and in the quality of caregiver-orphan relationship among these orphans could not be explained by the criterion of selection used by caregivers during adoption. Had one group of caregivers used a different criterion of selection, for instance, mental health of the orphans, it would have been argued that the differences in anxiety and quality of caregiver-orphan relationship was perhaps caused by the criterion of selection used during adoption.

The amount of material/financial support received from the government and from members of the orphans' extended families could not have caused the differences observed in anxiety and in the quality of caregiver-orphan relationship. The three groups of caregivers involved in this study received no support from the Kenyan government for the upkeep of these children. Moreover, the orphans living in the extended families where the caregivers received significantly higher amounts of support from the orphans' members of the extended families were higher in anxiety and lower in the quality of caregiver-orphan relationship than the orphans living in the other two destinations where the caregivers received lower levels of support.

The results of the between- and within-group differences produced mixed results about the relationship between sibling separation and anxiety, and between sibling separation and the quality of caregiver-orphan relationship. The between-group differences indicated that orphans adopted by members of their extended families were least likely to be separated from their siblings than those orphans adopted in the other two residential destinations; that orphans living with members of their extended families had lower scores in the quality of caregiver-orphan

relationship than the other two groups of orphans; and that orphans in extended families were higher in anxiety than those in orphanages, but similar in anxiety to those orphans living in the guardians homes. If sibling separation had a direct effect on anxiety and on the quality of caregiver-relationship, then the orphans living with their relatives and siblings in the extended families would have obtained lower anxiety scores and higher scores on the quality of caregiver-orphan relationship—the results of this study showed that this was not the case.

However, within-group differences showed that separation of siblings during adoption had significant effects on anxiety in orphans living in orphanages. The orphans living together with their siblings in the orphanages were lower in anxiety than those who were separated from their siblings. Furthermore, the within-group difference analysis indicated that separation of siblings during adoption had nonsignificant effect on anxiety for the orphans living in guardians' homes and extended families. Perhaps the children in these two destinations were already at high levels of anxiety due to other factors that separation of siblings alone could not make a difference. Thus, the differences observed among orphans living in the three destinations could not be fully explained by sibling separation.

Other Plausible Causes Identified

I discovered from my interactions with the orphans and the caregivers during my research that there were possibly two other factors, not systematically investigated in this study, that could have contributed to the differences observed in the psychological well-being of the three groups of orphans. These factors were the attitude of caregivers towards the orphans, and peer relationships within the residential destinations. The caregivers managing the orphanages had the most positive attitude towards the orphans, followed by caregivers in the guardians'

homes. The caregivers in the extended families had the least favorable attitude towards orphans under their care.

The caregivers in the extended families had the least favorable attitude towards the orphans under their care because they viewed these children as an extra burden to them. The orphans living in the extended families appeared to be more isolated and discriminated against than those who were living in the guardians' homes and orphanages. The grandparents in the extended families, who did not show any sign of discrimination against these children, were too old and poor to care for them. To feed these children was enough of a challenge to the grandparents, let alone to counsel and educate them. Most caregivers in the extended families accepted to provide care for the orphans mainly because these children had no where to turn to, and not because they were looking for children to adopt. According to the caregiver at Covenant Family House, the orphanages in Kisumu were flocked with orphans because of discrimination against these children by their own relatives. The relatives send these children to orphanages because of their discrimination against the orphans based on social and economic pressure. I accepted her observation as valid because the term "extended family" as used by the Luo is so wide that it is unimaginable that an orphan would fail to find support within the kinship system, if it were not for discrimination against the orphan by his or her own relatives.

This discrimination against AIDS orphans by their own relatives has been reported in other parts of Africa and in some parts of the world. For instance, in Zambia, orphans whose mothers died of AIDS were denied food by their own relatives who thought that these children were doomed, and feeding them was a waste of scarce food to delay the inevitable (Staff, 1999, August 14). In Thailand, it is very difficult to get AIDS orphans to be adopted. The relatives of these children are forced by social pressure to take them to orphanages. Once neighbors

know that the parents of the orphans died of AIDS, the aunts and uncles who take care of these children are ostracized. If the caregivers are in business, especially food, their business could collapse because of the stigma (Reuters, 1999, May 31).

The orphanages in Kisumu seemed to know how to break the cycles of poverty, discrimination, and isolation of AIDS orphans. Although the orphanages in Kisumu were not run by the government and did not have any consistent supply of income, they met the educational and psychological needs of these children much better than most extended families and guardians' homes did. This difference could be partly attributed to the positive attitude of the caregivers in these orphanages towards the orphans, and to peer relationships within the orphanages. Perhaps caregivers in these orphanages had positive attitudes towards these children for two reasons. First, the caregivers of these institutions were not employees of some organization or governmental agencies, but they were people who had offered their lives and resources to care for these desperate children. Second, the caregivers appeared to be people who had some altruistic qualities. They started these orphanages out of their own initiative because they had a calling from God to make a difference in someone's life. All the six orphanages involved in this study had some religious beliefs. Prayers are conducted in these institutions regularly for the orphans and they were taught to believe that it is only through God and hard work that they will succeed in life. This practice is supported by Hallowell's (1997) report that people who believe in God worry less because they learn to let go of the need for total control.

Peer relationship is another factor that could influence the psychological well-being of AIDS orphans living in the orphanages. Orphanages are unique in that they were the only institutions out of the three destinations investigated in this study where orphans could share the ordeal they have gone through without feeling cheated or betrayed. These children were bound to share their life experiences

whether they were told to do so or not. The orphanages offered a good atmosphere for the expression of grief and peer support. These institutions provided supportive opportunity for these children to learn that they were not alone, that there were other children who had also lost both parents to AIDS. These children not only share their life experiences, but they also share menial duties within the orphanages, a practice that teaches them to be responsible and to learn to cooperate with other children.

Children who were adopted in the extended families and guardian's homes perhaps had little opportunity to discuss their life experiences because they felt that they were different from the caregivers and from the biological children within their destinations. In these destinations the orphans may suppress their grief because they were not sure about their audience. Peer ridicule and rejection, which are serious stressors in children (Ladd, 1990), were more likely to occur between the orphans and the biological children in these two destinations. Moreover, caregivers, particularly those in the extended families, may not want to discuss with these orphans the circumstances that led to the death of their parents. They may not want to discuss the circumstances because they were emotionally attached to their dead relatives and may want to forget about them as soon as possible. The study of historic events and their devastating aftermath have helped us to understand how silence can influence people's lives. Bergmann and Jucovy (1992), using the holocaust as an example, reported that the silence maintained because the world needed to forget about the nasty experience can have long term effects on the psychological welfare of the survivors.

AIDS orphans are the survivors of the scourge and may also be the psychological sufferers of this complex and stigmatized disease, particularly when they are not accorded a wide latitude for discussion. Parents ailing from AIDS may choose to be silent about their condition—they may not tell their children the source

of their misery before dying. Similarly, caregivers may keep secret the behavior that caused the parents of the orphans to die of AIDS. The orphans may, however, sense that their parents died of AIDS, a secret which they must also protect. This secret is likely to affect these children when they mature and attempt to relate sexually to others. This attempt to experience sex may elicit a fear of repeating the past. These children, therefore, need to discuss among themselves issues related to AIDS that might psychologically affect them later in their lives.

My theory that peer relationship improves the psychological well-being of orphans staying in the orphanages is based on the fact that AIDS is a highly stigmatized disease and the best way to fight its psychological effects is through sharing experiences about it. For instance, there are indications that those who are HIV positive are happier when they openly discuss their serostatus and join People With AIDS (PWA) associations. What makes them happier is the fact that they are sharing their experiences with the others, through which they learn that they are not alone in this problem. During a recent conference on AIDS and sexually transmitted diseases held in Lusaka, Zambia, PWA were not allowed to mix with the HIV negative delegates, and they were not allowed to present papers during the conference. They were confined to a stadium about two kilometers away from the conference venue (Kalebbo, 1999, October 20). Probably the organizers of the conference believed that the HIV positive delegates could benefit more from the conference by sharing their own life experiences as people with AIDS.

This theory about the usefulness of peer relationships in improving the psychological well-being of AIDS orphans is related to Hallowell's (1997) theory of connectedness. Connectedness is a feeling of being a part of something larger than yourself. Social connectedness is made up of the ties people have with friends, neighbors, colleagues, and others they meet along the way. Without social connectedness children and adults feel lonely and isolated. According to Hallowell,

connectedness activates powerful psychological and physical healing forces that we are only beginning to understand.

To support his theory of connectedness, Hallowell (1997) cited a study by David Spiegel. Spiegel reported one of the most dramatic demonstrations of the healing power of connectedness when he found that group meetings prolonged the lives of women suffering from cancer. A professor of psychiatry at Stanford, Spiegel had expected to find just the opposite result. But when he studied two groups of women who were suffering from end-stage metastatic breast cancer, both groups treated medically, but one group also afforded the chance to meet with each other to talk and commiserate, he found that the women who met together regularly lived twice as long as those who did not have group meetings.

According to Hallowell's theory of connectedness, AIDS orphans perhaps experience high levels of anxiety because AIDS is a deadly and highly stigmatized disease, which disconnects these children from their parents through death, and from their relatives and friends through discrimination. These children are socially isolated because some of their relatives and friends fear that they might be HIV infected. Children who feel disconnected tend to worry because they experience loneliness, isolation, and insecurity. However, these children gain connectedness when they enter orphanages and meet other children who are also orphaned by AIDS. Once again these children begin to realize that they are not alone in what they are going through. They form friendships and sooner or later they begin to share their problems, a process that facilitates the psychological healing of these children. I do believe, therefore, that peer support is the best approach for helping PWA and AIDS orphans in Kisumu and in Africa in general to overcome their psychological problems.

Counseling of AIDS orphans by professionals may not be successful in Kisumu and in Kenya because there are very few qualified psychotherapists in this

country. The psychotherapists are so few that if HIV positive individuals and the AIDS orphans were to make appointments to consult these professionals, probably most of the AIDS patients would die before seeing to them. For a long time in the African culture, there were no professional counselors because old people acted effectively as the counselors. The seniors were consulted on matters affecting people because they were seen as reservoir of knowledge gained through experience and passed on from generation to generation. AIDS is a new phenomenon in African society, and I do not think that the old have learned enough about it to be in a position to counsel the youth about this scourge. Moreover, in a country like Kenya where the government is unable to provide basic needs and to educate these orphans, it is unreasonable to expect such a government to offer expensive social services like counseling to the thousands of orphans existing in the country.

The orphanages have been portrayed negatively as alienating children from their communities and for having harsh discipline; however, the effects of orphanages on human growth and development are understudied. Tiffin (1982) reported that almost no systematic studies have been carried out during the past five decades to address the concerns about orphanages, largely because nearly all orphanages in industrial nations have been closed and replaced by adoption and foster care. Yet, when the word “orphanage” is used, Americans typically cringe, imagining that the children who grew up in one had the crudest and cruelest of childhoods (McKenzie, 1996).

This negative attitude of the Americans towards orphanages is unfortunate because there are very few studies in the literature that have reported about the lives of those adults who went through orphanages. There is only one survey which is currently going on to assess the accomplishments of those who went through orphanages and are now 44 years and older. This survey is following the alumni

from three orphanages—a Jewish home in the Midwest, a Presbyterian home in the South, and a non-sectarian home in the Midwest. The preliminary findings of this survey show that, generally speaking, the alumni have surpassed, by wide margins, their counterparts in the general population on a variety of social and economic measures. The findings from this study stand in sharp contrast to the claims of many child care experts and policy commentators regarding the impact of orphanages on the children (McKenzie, 1996).

Although Americans loathe orphanages and have come to the conclusion that these institutions are bad for raising children, in the Third World countries, orphanages are often the only viable means of survival for thousands of orphans (Wolff & Fesseha, 1998). Wolff and Fesseha (1998), who conducted a study on war orphans in Eritrea, reported that it is possible to create humane social environments in the orphanages that will foster the emotional well-being and cognitive development of the orphans. In countries where foster care is culturally unacceptable and logistically unrealistic, the negative effects of the orphanages based on gut reactions need not be emphasized. This study has demonstrated that orphanages in Kisumu district may be the best alternative for the care of AIDS-orphaned children.

However, I do foresee some problems with the orphanages in Kisumu district. First, these orphanages might sooner or later run out of donors. The orphanages do not receive any support from the government and they do not have consistent sources of income. They depend on alms the caregivers receive from donors, particularly from the business community in Kisumu. The donors within Kisumu district or in Kenya are not many, considering that fact that about 80 per cent of the national income is held by 8 per cent of the population. The rest of the population share the remaining 20 per cent of the income (Ondieki, 1999, June 1). This implies that a small number of people exist in the district who can adequately

meet their own financial obligations and still have surplus money to donate to orphanages.

Second, these orphanages are special in the sense that they were started by the individuals who were still managing them. The existence of these orphanages revolve around those personalities who initiated them. Whether or not these orphanages will survive after those people who started them are gone is anybody's guess. It is also unknown how effective these orphanages would be in meeting the needs of the orphans if they were funded by the Kenyan government, and operated on a large scale. Government funded institutions particularly in the developing world are well known for their inefficiency and corruption.

Finally, there were no well-laid out procedures for admissions, expulsions, and transitions from these institutions. Apart from the desperate condition of the orphans, what are some of the factors that should be considered during admissions of these children into the orphanages? Under what conditions should an orphan be expelled from the orphanage and where should he or she go after expulsion? Theoretically, at the age of 18 years an orphan should leave the orphanage because he or she is no longer considered a child. In a country like Kenya, where there is no social welfare system and jobs are hard to come by, where will these children go when they leave the orphanages? The caregivers involved in this study did not have clear answers to these questions. There is a need to address these questions if the orphanages are going to salvage the orphans from their immediate and future problems.

Adoption of AIDS Orphans in Kisumu

The residential destinations in Kisumu care for both AIDS orphans and children orphaned through other causes. This study examined the process of adoption of AIDS-orphaned children, by determining whether or not AIDS patients

made placement and custody plans for their children before dying, and by determining whether or not caregivers considered the HIV status of the orphans before adoption. The results showed that 96.8 per cent of the deceased parents did not contact the caregivers about placement and custody of their children, and only 3.2 per cent of the deceased parents made such contacts before dying. All these deceased parents who made plans contacted caregivers in guardians' homes about custody of their children. It was concluded that the vast majority of AIDS patients in Kisumu district do not make placement and custody arrangements for their children before dying. Finally, the results indicated that 99.6 per cent of caregivers did not consider the HIV status of the orphans at the time of adoption. Only 0.4 per cent of the caregivers considered the HIV status of the orphans before adoption. It was concluded that caregivers in Kisumu district did not consider the HIV status of the AIDS orphans before adoption regardless of their residential destination.

HIV is stigmatized, and some people fear adopting AIDS orphans for fear that these children could be HIV positive; however, the results of this study showed that caregivers in all the three residential destinations in Kisumu district did not consider the HIV status of these children at the time of adoption. These children were not tested for HIV before they were admitted to the residential destinations. This finding agrees with a survey conducted in Zambia, which indicated that no one knows how many AIDS orphans carry the virus. No one tests these children in Zambia, because it would do no good. There is no treatment for AIDS in that country; even AZT, the most basic of AIDS drugs is unaffordable in a country where \$50 is considered a good pay (Staff, 1999, July 4).

Although the HIV status of the AIDS-orphaned children was not considered by caregivers in the three residential destinations, it is likely that some of these children were HIV positive, particularly those who were born to HIV-infected mothers. I learned from my discussions with the caregivers that some of them did

not consider the HIV status of the orphans because they were ignorant of the danger a HIV-positive child poses to HIV-negative children. Most of the caregivers in the extended families believed that HIV is only transmitted through sexual intercourse and from mother to child during pregnancy. However, caregivers running the orphanages and most caregivers in the guardians' homes were aware of the danger HIV-positive orphan poses to the other children.

Caregivers in five orphanages involved in this study reported that they would not knowingly admit HIV-positive children because of the danger these children pose to the other children in the orphanage, and because they did not have resources that could match the health requirements of these children. Of the six orphanages involved in this study, only Saleem orphanage would knowingly admit infants and children who were HIV positive. The caregiver of this orphanage informed me that she accepts children into the orphanage regardless of their HIV status because these children did not choose to be HIV-positive or negative, and that their lives were in the hands of God.

A recent study by Nielsen, Rosthøj, Machuca, Nielsen, and Smith (1998) indicates that the danger a HIV-positive child poses to the other children is not imaginary but real. Nielsen et al. reported a case of nosocomial child-to-child transmission of HIV. In this case, a HIV-negative child contacted the virus from another child in a hospital in Denmark. The recipient of the virus was admitted into the hospital for acute lymphoblastic leukemia. This child was HIV negative at the time of admission to the hospital. The biological parents of this child were both HIV negative, therefore, could not have been the source of the viral infection. This child was treated in a pediatric oncology unit, which also carried four children with HIV infection. The unit had one dining room and one playing room, where in-patient children dined and played together.

To examine the possibility of child-to-child transmission, the investigators compared the genetic profile of HIV-1 from the recipient child and from these four children who had HIV infection. All these children had HIV-type 1 subtype A. Further analyses examined a span of 324 nucleotides in the hypervariable V3-region of the *env* gene and a span of 463 nucleotides in the p17 *gag* region of the HIV-1 genome. The analysis showed that only one child had a viral genotype similar to the virus of the recipient child. The other children had viral genotypes unrelated to that of the recipient child. From the stored serum samples it was shown that seroconversion of the recipient child occurred within a period of 12 months, confirming that the this child contracted the virus in the hospital. The health authorities at the hospital concluded that based on viral genotyping, the viral transmission had occurred from another child with HIV-1 infection. The most plausible explanation for this viral transmission was through an unnoticed needlestick which occurred most likely in the playing room.

This case stresses the fact that blood and bloody body fluids of HIV-infected persons are infectious, and that viral transmission can occur in health-care settings with attention to precautions to prevent infection. If child-to-child HIV transmission could occur in a hospital where measures were taken to prevent HIV infection, it is possible that child-to-child transmission of HIV can occur in a residential destination where no such preventive measures are taken. For instance, at Covenant Family House, there was an eight year-old boy who was quite sickly—suffering from frequent coughs and bouts of rashes all over his body. The caregiver was suspecting that this child was HIV positive and was at the symptomatic stage of AIDS. The orphanage was spending a lot of money on his medication. However, the caregiver was reluctant to have this child tested for HIV because a positive result would mean sending him away from the orphanage, yet he did not have an alternative home of care. This boy suspected of HIV infection

played with other children in the orphanage without any restriction. Such a child, if HIV positive, could transmit the virus to HIV-negative children through accidental exchange of bloody body fluids. In fact, Mati (1997) cautioned that fights and bites between children could expose HIV-negative children to the risk of HIV infection.

Another recent study conducted in Kenya has indicated that HIV can be transmitted from child to child through sexual relationships. Naamara, the Kenya adviser for the UNAIDS program reported that many HIV-positive children were now living beyond the usual five years and into their teens. This new report underscores one threat to the control of the spread of this deadly disease in teenagers. It means that child-to-child HIV transmission can occur not only through bloody fluids, but also through vaginal and seminal fluids (Staff, 1999, May 19). The AIDS orphans who were born HIV positive can live up to the teenage years, become sexually active, and transmit this virus to other teenagers through wet sexual intercourse.

Implications of the Findings for Policy Makers

The results of this study have significant implications for policy makers about the fate of AIDS orphans both in Kisumu and Kenya. The results of this study indicated that caregivers who were struggling to raise hundreds of orphans in Kisumu received no support whatsoever from the Kenyan government. However, there are reports that this government has already spent over Kshs. 40 billion on medical care for the HIV/AIDS patients in the country (Staff, 1999, July 9). There is no report of how much money the government has so far spent on the AIDS-orphaned children in the country. Moreover, there is no record of any orphanages for AIDS orphans being funded by the government. Perhaps the time is ripe for the government to focus seriously on AIDS orphans because these children are the

future of the country. Brushing the problem of AIDS orphans aside is like ignoring land mines that at a later stage might maim those who ignored them.

The age-old belief in Africa that the extended family is always there to care for children when a disaster like AIDS strikes is today a myth which must be put aside. The reality, as reflected in the findings of this study, is that extended families can no longer adequately care for the orphans. If policy makers in Kenya believe without research data that extended families are the best alternative care for AIDS orphans, then, they should fund these families so that they can at least meet the basic and educational needs of these children.

Peer support is perhaps the way forward to help AIDS orphans overcome their current and future psychological problems. These children just like PWA and women widowed by AIDS should be helped to get together to discuss the problems they are going through. Such discussions could be beneficial for the psychological healing in these children, and could also be helpful in curbing the spread of the disease in the country.

The results of this study indicated that separation of siblings during adoption had a significant effect on the level of anxiety of orphans dwelling in orphanages. The orphans who were not separated from their siblings were lower in anxiety than those who were separated from their siblings during adoption. This finding is inconsistent with the policy at Ebenezer Children's Home of adopting only one orphan per family. Perhaps caregivers running orphanages should be encouraged to adopt two or more needy children from the same family—a practice that would enable orphans to enjoy both sibling and peer support.

The problems caused by AIDS are no longer just individuals' problems, they are now national problems requiring collective actions that will turn the dark future of this country around. For instance, there is a need for a policy on the confidentiality of the HIV serostatus of the orphans. Probably the HIV serostatus

of the AIDS orphans should be known by those people who are involved in raising them. Those children who are HIV positive should be admitted into special orphanages that have facilities that match their medical requirements. This action will eliminate the current fear to adopt these children because they might be HIV positive, and will also limit the possibility of child-to-child transmission of this deadly virus.

Finally, this study reports a high school dropout rate among AIDS-orphaned children living in extended families. The Kenyan government should offer free education from primary school to university to these children and to the needy orphans in other destinations. This action will enable these orphans to compete favorably with the other children in the general population for the limited job opportunities available in the economy.

Recommendations for Further Research

The Quality of Caregiver-Orphan Relationship Scale (QCORS) was developed by the researcher and was used in this study for the first time. There is need for further research to test the psychometric properties of this scale. In particular, there is need to administer this scale to at least 100 orphans and use the data collected to do confirmatory factor analysis and report factor congruency. A high factor congruency would support the claim made in this study that there are three factors underlying this scale. The same data should also be used to obtain scores for each subject in the sample on each of the three factors. The scores of the subjects on each of the three factors should then be correlated. A significant correlation among the scores in the three factors would be a sufficient premise for another claim that there is a *general* factor underlying QCORS.

This study compared AIDS orphans in the three residential destinations on educational and psychological variables. There is need for further research to

compare on these variables the orphans living in the three residential destinations to nonorphans in the general population.

The attitude of caregivers toward orphans and peer support were identified as some of the factors that could influence the psychological well-being of AIDS-orphaned children. There is a need for systematic research to investigate the effects of these two factors on the psychological well-being of these children.

Lastly, there is a need for concerted effort to identify and investigate other factors not mentioned in this study that could have caused the observed differences among orphans living in different destinations.

Delimitation of the Study

The classification of the residential destinations of AIDS orphans used in this study was based on the Luo social organization. This classification may not apply to ethnic groups with different social organizations.

Limitations of the Study

First, this study was a causal comparative study investigating in retrospect the effects of residential destination on orphans and the possible causes of the differences observed among the three groups of orphans. The major limitation of a causal comparative study like this one is that it does not permit random assignment of elements to the groups. It was untenable to randomly assign orphans to extended families, guardians' homes, and orphanages.

Second, only a small number of measures of the orphans' well-being were used. Furthermore, only five plausible causes of the differences observed among the orphans were systematically investigated in this study. There is likelihood that the differences observed among the subjects were effected by more than five

causes. However, it was impossible to investigate all the possible causes of the differences observed among the three orphans in one single study.

Third, most if not all subjects involved in this study participated in a research for the first time. In fact, very few social science studies on orphans have been conducted in Kisumu, because research is expensive and funds for research are hard to come by in Kenya. Perhaps the subjects participated enthusiastically in this study because they expected something tangible in return, such as financial assistance or sponsorship for further studies. Unfortunately, I had absolutely nothing tangible to offer to the orphans or to their caregivers at the end of the study.

Lastly, the generalization of the findings of this study to orphanages set up more broadly and run by governments is unknown.

Conclusions

The findings of this study enhanced our understanding of the effects of residential destination on the education and psychological well-being of AIDS orphans in Kisumu district. The study indicated that AIDS orphans living in the orphanages were perhaps better cared for than those in guardians' homes and extended families. The orphanages appeared to be best both educationally and psychologically for these children as compared to the other two destinations.

The findings of this study challenged the common belief in Africa that the extended families will be there to meet the needs of the orphans when AIDS strikes. The findings are inconsistent with the assumption that AIDS orphans absorbed in the extended family are raised in a safe and supportive community (Groce, 1995).

The five plausible causes of the differences investigated in this study did not fully explain the differences observed among the three groups of orphans. The amount of money spent by caregivers on the upkeep of the orphans was the only factor that could be argued to have affected the dependent variables investigated.

Obviously one factor could not explain all the differences observed in the dependent variables among the three groups of orphans involved in this study. I identified the attitude of caregivers towards orphans, and peer support as two other factors that could affect the psychological well-being of orphans.

Finally, the findings of this study indicated that AIDS patients did not make placement arrangements for their children before dying, and that the caregivers did not consider the HIV status of the orphans before adoption. There is need to consider the HIV status of these children during adoption because research shows that there are some risk, though low, of child-to-child HIV transmission.

APPENDICES

Appendix A



OFFICE OF THE PRESIDENT

Telegraphic address: "RAIS"
Telephone: Nairobi 227411
When replying please quote

~~PERSONAL DIVISION~~
P.O. Box 30510
NAIROBI

Ref. No. OP/13/001/28C 71/2
and date

12th May, 1998

H. M. Nelly Kodero,
Moi, University,
P.O. Box 6547,
ELDORET.

Dear Sir,

RESEARCH AUTHORIZATION

Please refer to your application for authority to conduct research on "Education and Quality of Life of Aids Orphans in Kisumu District, Kenya". I am pleased to let you know that your application has been considered and approved. Accordingly you are authorized to conduct research in Kisumu District as from May, 1998 to April, 1999.

You are advised to pay a courtesy call on the District Commissioner, Kisumu before embarking on your research project. You are further advised to avail two copies of your final research report to this office upon completion of your research project.

Yours faithfully,

J. E. EKIRAPA
FOR: PERMANENT SECRETARY/
PROVINCIAL ADMINISTRATION

cc: The District Commissioner,
KISUMU.

Appendix B

Dept. of Educ. Psychology
University of Alberta,
Edmonton, Canada. T6G 2G5

Dear Participant.

Re: Informed Consent

I hereby kindly request you and the orphan under your custody to participate in my study. The purpose of my study is investigate the factors that influence the education and psychological well-being of orphans. The study requires your sincere and accurate response to all items in the instruments used in data collection.

The orphan will be asked to give his or her own consent, and to respond to questions and statements in three research instruments. Some examples are: Have you ever repeated a class?; I want to stay with my caregiver until I grow up; I am always kind.

You will be asked to respond to questions in a questionnaire. Some examples are: For how long have you cared for this orphan? What is your institution of care for this orphan?

You will not be required to write your names on any of the papers provided during data collection. The researcher or his assistant will not write your names on any of the instruments used in this study. Confidentiality of your responses is guaranteed by the researcher. Both of you have full right to withdraw from the study at any time you so wish. You may contact the researcher for more information about the study or/and you may request the researcher to communicate to you the findings of this study.

Please sign below if you accept to participate in the study, and if you authorize the orphan to participate in this study. Thank you very much for volunteering to participate.

Yours sincerely

H. M. Nelly Koderó (Researcher)

Signature of Caregiver _____ Date _____

Signature of the Child _____ Date _____

Appendix C**Critical Values for Correlation Coefficient, Alpha = .01 (Two-Tailed Test)**

Number of Subjects (n)	Critical Values (C. V.)
50	.361
80	.286
100	.256
140	.217
180	.192
200	.182
250	.163
300	.149
400	.129
600	.105
800	.091
1000	.081

From Stevens (1996, p. 371).

Appendix D

Revised Children’s Manifest Anxiety Scale (“What I Think and Feel”)

1. I have trouble making up my mind.....	Yes	No
2. I get nervous when things do not go the right way for me.....	Yes	No
3. Others seem to do things easier than I can.....	Yes	No
4. I like everyone I know ...	Yes	No
5. Often I have trouble getting my breath...	Yes	No
6. I worry a lot of the time.....	Yes	No
7. I am afraid of a lot of things.....	Yes	No
8. I am always kind.....	Yes	No
9. I get mad easily..	Yes	No
10. I worry about what my caregivers will say to me.....	Yes	No
11. I feel that others do not like the way I do things.	Yes	No
12. I always have good manners.....	Yes	No
13. It is hard for me to get to sleep at night..	Yes	No
14. I worry about what other people think about me.....	Yes	No
15. I feel alone even when there are people with me.....	Yes	No
16. I am always good	Yes	No
17. Often I feel sick in my stomach..	Yes	No
18. My feelings get hurt easily.....	Yes	No
19. My hands feel sweaty....	Yes	No
20. I am always nice to everyone.....	Yes	No
21. I am tired a lot.....	Yes	No
22. I worry about what is going to happen.....	Yes	No
23. Other people are happier than I.....	Yes	No
24. I tell the truth every single time..	Yes	No
25. I have bad dreams.....	Yes	No
26. My feelings get hurt easily when I am fussed at.	Yes	No
27. I feel someone will tell me I do things the wrong way.....	Yes	No
28. I never get angry.....	Yes	No
29. I wake up scared some of the time.....	Yes	No
30. I worry when I go to sleep at night.....	Yes	No
31. It is hard for me to keep my mind on my schoolwork or work..	Yes	No
32. I never say things I shouldn’t....	Yes	No
33. I wiggle in my seat a lot.....	Yes	No
34. I am nervous.....	Yes	No
35. A lot of people are against me.....	Yes	No
36. I never lie	Yes	No
37. I often worry about something bad happening to me.....	Yes	No

Read each sentence carefully. Circle the word “Yes” if you think it is true about you. Circle the word “No” if you think it is not true about you. Do not circle both “Yes” and “No” for the same sentence. There are no right or wrong answers. Only you can tell us how you think and feel about yourself.

Appendix E



Western Psychological Services

Publishers and Distributors since 1948

October 5, 1998

H.M. Nelly Kodero
P.O. Box 6547
Eldoret
Kenya

Dear Nelly:

Accompanying this cover letter is your copy of WPS Invoice #688952. The invoice serves as your license to adapt the Test Form for the *Revised Children's Manifest Anxiety Scale (RCMAS)* by creating a research version to use with AIDS-orphaned children in Kenya as described in your letters of December 9, 1997 and August 15, 1998, to reproduce up to two hundred (200) copies, and to adapt the RCMAS scoring key as necessary for the purpose of the research. This authorization is for sole use in your dissertation research through the University of Alberta — with no authorization for continued or commercial use for any purpose — and is subject to the provisions in my letter to you of December 11, 1997.

With additional reference to my December 11 correspondence, the following is the copyright notice that is to appear in its entirety on each reprint:

Items from the RCMAS copyright © 1985 by Western Psychological Services. Adapted and reprinted by H.M. Nelly Kodero for specific research use by permission of the publisher, Western Psychological Services, 12031 Wilshire Boulevard, Los Angeles, California 90025, U.S.A. All rights reserved. No additional reproduction, in whole or in part, may be made without written permission from Western Psychological Services.

WPS looks forward to receiving the results of this research. Please contact me again if I may be of additional assistance.

Sincerely yours,

A handwritten signature in dark ink, appearing to read 'Susan Dunn Weinberg', written over a horizontal line.

Susan Dunn Weinberg
Assistant to the President
WPS Rights and Permissions
e-mail: weinberg@wpspublish.com

SDW:se
Enclosure

Appendix F

Destination _____

Number _____

Biographical Form

Please read each of the following questions or statements carefully. Respond by circling letter **A**, **B**, **C**, **D**, or **E** that corresponds to your most appropriate choice and by filling in the blank spaces provided.

1. What is your gender?
A. female
B. male
2. When were you born?
year _____ month _____
3. What is your birth order?
A. first born
B. middle born
C. last born
D. only child
4. How many brothers of the same mother and father do you have?

5. How many sisters of the same mother and father do you have?

6. Is your caregiver taking care of any brothers and sisters?
A. yes
B. no
7. How many caregivers have you lived with?
A. 1
B. 2
C. 3
D. 4
E. other (specify) _____
8. For how long have you lived with your present caregiver?
years _____ months _____

9. Do you attend school?
A. yes
B. no
10. If your answer to question 9 is **no**, what is the reason for your failure to attend school?
A. lack of fees
B. sickness
C. engagement in domestic work
D. poor performance in class work
E. other, (specify) _____
11. If your answer to question 9 is **yes**, in which class are you?

12. Have you ever repeated a class?
A. yes
B. no
13. If your answer to question 12 is **yes**, which class did you repeat?

14. If your answer to question 12 is **yes**, why did you repeat the class?
A. lack of fees
B. poor performance in class work
C. sickness
D. absenteeism from school
E. other (specify) _____
15. What is your weight in kilograms and grams?
kilograms _____ grams _____
16. What is your height in meters and centimeters?
meters _____ centimeters _____
-

Appendix G

Destination _____

Number _____

Caregiver Questionnaire

Please read each of the following questions or statements carefully. Respond by circling letter A, B, C, D E or F that corresponds to your most appropriate choice and by filling in the blank spaces provided.

1. What is your gender?
A. female B. male
2. What is your age?

3. When was this child orphaned?
year _____
4. What was the age of the mother of this orphan at the time of her death?
A. 15 - 25 years B. 26 - 35 years C. 36 - 45 D. 46 - 55 E. Over 56 years
5. What was the age of the father of this orphan at the time of his death?
A. 15 - 25 years B. 26 - 35 years C. 36 - 45 D. 46 - 55 E. Over 56 years
6. The mother of this orphan died after _____
A. a short illness B. a long illness C. an accident
7. The father of this orphan died after _____
A. a short illness B. a long illness C. an accident
8. Do you know the cause of death of the mother of this orphan?
A. yes B. no
9. If your answer to question 8 is yes, what was the cause of her death?

10. Do you know the cause of death of the father of this orphan?
A. yes B. no
11. If your answer to question 10 is yes, what was the cause of his death?

12. For how long have you cared for this orphan?
year(s) _____ month(s) _____
13. Are you marriageable to this orphan?
A. yes B. no
14. Did the parent(s) of this orphan contact you about the custody of their child?
A. yes B. no

15. If your answer to question 14 is **no**, how did you get in touch with this child?
A. through a relative
B. through a child welfare organization
C. through mass media
D. other (specify) _____
16. Did you consider the HIV status of this orphan at the time of adoption?
A. yes B. no
17. Did you base your selection of this orphan on certain criteria?
A. yes B. no
18. If your answer to question 17 is **yes**, what was the major factor that influenced your decision to adopt this orphan?
A. age of the orphan
B. gender of the orphan
C. physical health of the orphan
D. mental health of the orphan
E. desperate condition of the orphan
F. other (specify) _____
19. Do you receive material/financial support from the members of this orphan's extended family?
A. yes B. no
20. If the answer to question 19 is **yes**, what is the main support you receive?
A. food
B. school fees
C. clothing
D. money
E. other (specify) _____
21. Do you receive material/financial support from the government?
A. yes B. no
22. If the answer to question 21 is **yes**, what is the main support you receive?
A. food
B. school fees
C. clothing
D. money
E. other (specify) _____
23. Do you also care for this orphan's brothers or sisters?
A. yes B. no
24. If your answer to question 23 is **yes**, how many brothers of this orphan do you care for? _____
25. If your answer to question 23 is **yes**, how many sisters of this orphan do you care for? _____

26. What is your institution of care for this orphan?

- A.** household **B.** orphanage

If your answer to question 26 is household, respond to items 27, 28, and 29.

27. How many dependents do you have in your household?

28. What is your monthly income in Kenya Shillings?

Kshs. _____

29. How much money do you spend monthly on this orphan?

Kshs. _____

If your answer to question 26 is orphanage, respond to items 30, 31, and 32.

30. How many orphans are you caring for in your orphanage?

31. Where do you receive most financial support to run this orphanage

- A.** Kenya government
B. non-governmental organizations
C. other (specify) _____

32. How much money do you spend monthly on each orphan?

Kshs. _____

Appendix H

Overview of Multivariate Analysis

MANOVA techniques were originally developed for use in correlational research in order to examine relationships among multiple dependent variables. The techniques were later applied to analysis of variance when it was realized that dependent variables in research are unlikely be unrelated (Tabachnick & Fidell, 1983). MANOVA is now widely used in social science and research because many modern research questions cannot be adequately addressed by univariate analysis. By allowing measurement of a variety of behaviors within a single research without violating acceptable levels of errors, MANOVA can help the researcher to design a study that models social reality (Finn & Mattson, 1978).

Multivariate analysis of variance is an extension of univariate analysis of variance in the case of multiple dependent variables. MANOVA is preferred over fragmented univariate analyses of variance because it allows for control over the inflation of Type I error rate resulting from analyzing sets of measures (Harris, 1993). MANOVA is also preferred because most independent variables affect the subjects in more than one way, hence the need for several criterion measures. By using several outcomes, we can obtain a more complete and detailed description of the phenomenon under investigation (Stevens, 1996).

In contrast to MANOVA, ANOVA has the major limitation of isolating and investigating one dependent variable as if it is not related to the other variables influencing human behavior. MANOVA assumes that a set of variances and covariances will exist among the dependent variables. These are assumed in the model, estimated from the data, and used as an important part of the computation and inference (Scariano & Davenport, 1987). This technique (MANOVA) involves finding linear combinations of the dependent variables that best separate the groups and then testing whether these new variables are significantly different for the

groups (Judd & McClelland, 1989). According to Harris (1993) MANOVA should be employed only if one is interested in examining the linear combination of p measures (where p refers to the number of dependent variables). If one is interested only in comparing the subjects on each dependent variable separately, then conducting p separate ANOVAs, each at a Bonferroni-adjusted individual Type I error rate of $.05/p$, will provide a much more powerful test of these univariate effects than would MANOVA. Thus, the unique advantage of applying MANOVA lies in the identification of linear combinations of measures that potentially yield much larger F than any single measure. This combination of dependent variables is achieved through the application of matrix algebra in MANOVA calculations.

Basic Matrix Calculations in MANOVA

The statistical calculations involved in MANOVA are complex and require a basic knowledge of matrix algebra. The amount of hand calculations involved in carrying out MANOVA could be prodigious. The calculations are best run on statistical computer programs. These packages carry out matrix operations such as matrix multiplication, matrix inversion, computation of eigenvalues and determinants of matrices. MANOVA calculations begin with a matrix of scores for the dependent variables. A matrix is a rectangular array of real numbers with R rows and C columns. In a multivariate data matrix, R is equal to N , the sample size, and C is equal to p , the number of dependent variables (Marascuilo & Levin, 1983). For instance, in this study's data matrix, R is equal to 450, the sample size, and C is equal to 2, the number of dependent variables. Thus, the multivariate score matrix used in my data analysis has dimensions of 450×2 .

From the multivariate score matrix, the mean and deviation scores of each dependent variable are calculated. Since two or more dependent variables are involved in MANOVA, the means compared are vectors and not scalars or single

numbers as in univariate analysis. A vector of numbers is a listing of the numbers in a vertical column closed on each side by parenthesis (Comrey, 1973). For example, the means involved in this study to answer my multivariate questions that no difference exists among the three groups of orphans in anxiety and in quality of caregiver- orphan relationship can be represented as follows:

$$H_o: \begin{bmatrix} \mu_{11} \\ \mu_{21} \end{bmatrix} = \begin{bmatrix} \mu_{12} \\ \mu_{22} \end{bmatrix} = \begin{bmatrix} \mu_{13} \\ \mu_{23} \end{bmatrix}$$

where μ refers to population mean; the first part of the subscript refers to variable; and the second part to group. Hypothesizing that the vectors are equal implies that the three groups of orphans are equal on the two dependent variables.

The deviation scores of a set of dependent variables involved in MANOVA form a matrix. In MANOVA, the sum of squares (SS) in ANOVA, which are obtained by adding up the squares of the deviation scores, is replaced by the sum of squares and cross-products (SSCP) matrix. The SSCP matrix is obtained by multiplying a deviation scores matrix by its transpose. A transpose of a matrix is the matrix obtained by interchanging rows and columns. For example, if a matrix **A** has dimensions of $r \times s$, then the dimensions of the transpose are $s \times r$.

The variance of each dependent variable is also calculated from the multivariate score matrix. In addition, the covariance for each pair of dependent variables is computed. To represent variance in MANOVA, all the variances and covariances must be considered. Thus, in MANOVA, the notion of variance of a single variable in ANOVA is replaced by the matrix of variances and covariances for a set of dependent variables. This matrix of variances and covariances is obtained by multiplying SSCP by a constant, namely $1/(n-1)$, where n is the sample size. In this matrix, the variances of the dependent variables occupy the diagonal while the covariances of the variables are off diagonal. The determinant of this matrix is a measure of the spread and is called the generalized variance of a set of

dependent variables. The determinant is calculated as the product of the eigenvalues (characteristic roots) of a matrix. Thus, in MANOVA, the determinant of the covariance matrix neatly characterizes within and total variability in terms of single numbers.

In sum, no single numbers representing the hypothesis and error sum of squares exist in MANOVA because many dependent variables are involved. Instead, matrices exist for the hypothesis and error sum of squares and cross-products (SSCP). The hypothesis or between (H or B) matrix is a measure of the differential effects of the groups or treatments on the dependent variables. The error or within (E or W) matrix is a measure of within group variability. These matrices are useful in multivariate tests of null hypotheses.

Multivariate Test Statistics

In univariate analysis of variance, the F statistic is used to assess the tenability of the null hypothesis (H_0), where F is the ratio of between to within variability. A common question in multivariate analysis of variance is “What statistic do we use for testing the multivariate null hypothesis (H_0)?” There is no single answer, as several test statistics are available. The most commonly used test statistics in evaluating multivariate differences are Wilks’ Lambda (Wilks, 1932), Pillai’s trace (Pillai, 1955), Roy’s largest root (Roy, 1957), and Hotelling’s trace (Hotelling 1951). These multivariate test statistics are generally based on the eigenvalues and determinant of HE^{-1} , where H is the hypothesis SSCP matrix, and E^{-1} is the inverse of the error SSCP matrix (Harris, 1993).

The error SSCP matrix is inverted so that it can be used to divide the hypothesis SSCP matrix. Inversion for matrices is the analogue of division for numbers. Perhaps an analogy with the univariate ANOVA might be useful. In ANOVA, the test statistic $F = MS_b/MS_w$ (Mean Squares between over Mean

Squares within). This can also be written as $F = MS_b(MS_w)^{-1}$. In the first version of this formula, the MS_b is divided by MS_w , while in the second version of the formula the MS_b is multiplied by the inverse of MS_w . Both versions have the same meaning—the ratio of between variability to within variability. The analogue of univariate analysis F test statistic in multivariate analysis of variance is HE^{-1} or BW^{-1} . In MANOVA “dividing” the between variability by the within variability can be achieved only by multiplying the H or B matrix by E^{-1} or W^{-1} matrix.

Although the test statistics in MANOVA are generally based on eigenvalues and the determinant of HE^{-1} , the details of their formulae differ. The formula for Wilks’ Lambda is given here because it was used to answer my multivariate research questions. Wilks’ Lambda was used to answer questions three and four for four reasons. First, Wilks’ Lambda is the most widely used test statistic for determining whether several groups differ on a set of dependent variables. Second, Wilks’ Lambda is powerful and robust—it detects differences when they exist and is not much affected by departures from multivariate normality assumptions (Stevens, 1996). Third, Wilks’ Lambda is an accurate multivariate test for moderate sample sizes like the one involved in this study. Finally, Wilks’ Lambda is available in the SPSS program used in data analysis in this study.

Wilks’ Lambda is a ratio between the determinant of Within SSCP matrix and the determinant Total SSCP matrix. Total SSCP matrix is the sum of Between SSCP and Within SSCP matrices. Wilks’ Lambda is given by this formula:

$$\text{Lambda} = \frac{|\mathbf{W}|}{|\mathbf{T}|} = \frac{|\mathbf{W}|}{|\mathbf{B} + \mathbf{W}|}, \quad 0 \leq \text{Lambda} \leq 1,$$

where \mathbf{B} is the between sum of squares and cross-products matrix (Between SSCP matrix), which is a measure of between group variability. \mathbf{W} is the within sum of squares and cross-products matrix (Within SSCP matrix), which is a measure of within group variability. $|\mathbf{W}|$ is the determinant of within SSCP matrix. \mathbf{T} is a

measure of total variability between and within groups (Total SSCP matrix). In \mathbf{T} , the observations in each group are deviated about the grand mean for each variable. $|\mathbf{T}|$ is the determinant of the Total SSCP matrix.

Wilks' Lambda is an inverse criterion, that is, the smaller the value of Lambda the more evidence for group difference. If no group difference exists then Lambda is equal to one (Olson, 1974). In other words, if no treatment effect exists, then the Between SSCP matrix is equal to zero:

$$\mathbf{B} = \mathbf{0}, \text{ and } \text{Lambda} = \frac{|\mathbf{W}|}{|\mathbf{0} + \mathbf{W}|} = 1$$

whereas if \mathbf{B} were very large relative to \mathbf{W} , then Lambda would approach 0.

In univariate analysis of variance, the exact shape of the F distribution depends on the degrees of freedom values for the numerator and denominator of the F -ratio. The F value is near 1 if the H_0 is true, and the value of F is large if the H_0 is not true. The critical values in the F distribution tables are used to separate those values reasonably near 1.00 from the values significantly greater than 1 (Gravetter & Wallnau, 1996). However, the multivariate sampling distribution for Lambda is complex, and generally an approximation is necessary. Two approximations are commonly used. These are Rao's F and Barlett's χ^2 . Rao's F is the most commonly used and is given as the multivariate F on SPSS program. The two statistics are good and generally will lead to the same decision on H_0 (Lohnes, 1961).

Although approximations are commonly used for the distribution of Lambda, certain values of k and p exist for which the function of Lambda is exactly distributed as an F ratio (where k is the number of groups and p is the number of dependent variables). When k is equal to 2 or 3 and for any value of p , Lambda is exactly distributed as an F ratio (Tatsuoka, 1971). This study involved 3 groups

and 2 dependent variables, so the Lambda values reported were exactly distributed as F ratio.

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